No. 3 *The Carabid Beetles of New Guinea*[1]
Part I. Cicindelinae, Carabinae, Harpalinae through Pterostichini

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CONTENTS

[1] Work aided by two fellowships of the John Simon Guggenheim Memorial Foundation, 1947 and 1956; see pages 327 and 328.

INTRODUCTION

Purpose; sources of material. This is, in taxonomic sequence, the first part of a survey of the beetles of the family Carabidae of the island of New Guinea. However, it is not the first-published part of the survey. Part II, covering the Agonini (Anchomenini), has already appeared.[2] Reasons for publishing Part II before Part I are given on page 90 of Part II. The present part covers the subfamilies and tribes of Carabidae that precede the Agonini in the Junk-Schenkling *Coleopterorum Catalogus* (Pars 86 by Horn, 1926, and Pars 92, 97, 98, 104, and 112 by Csiki 1927-1933). Part III will cover the groups that follow the Agonini. These three parts, arranged as numbered, will then cover the whole family Carabidae in the order of the *Catalogus*. A fourth part will be necessary for statistics and discussion of the New Guinean carabid fauna as a whole and of its geographical relationships and origins, and to describe additional species that accumulate during the course of the work.

I have already listed (Part II, pp. 90-91) the principal sources of material used in this survey. Three notable additional lots have been received since then. One is a collection of more than 1,000 specimens of mostly small Carabidae collected in New Guinea by the Hungarian entomologist Dr. L. Biró from 1896-1902, loaned me for study by the Hungarian National Museum, Budapest, through the kindness of Dr. Z. Kaszab. Another is the collection made in New Guinea and elsewhere by Dr. E. O. Wilson in 1954-1955. This collection is not large (Dr. Wilson was concentrating on ants) but it includes a number of interesting species from new localities. The third is a lot of about 1400 specimens recently collected in New Guinea by Dr. J. L. Gressitt and others (W. W. Brandt, E. J. Ford, Jr., and T. C. Maa) for the Bishop Museum. The Bishop Museum is now accumulating large collections of insects from New Guinea as well as from other parts of the Pacific-Australian area, and more Carabidae will certainly be forthcoming, but not in time to be included in this part of my work. They will have to be dealt with in Parts III and IV. Besides the principal collections described here and in Part II, I have received specimens or assistance from many other museums and individuals, who will be listed in Part IV.

[2] *Bulletin of the Museum of Comparative Zoology*, Vol. 107, No. 3, pp. 87-252, with 4 plates, August 1952.

Disposition of material; abbreviations. Unless otherwise noted, specimens collected by myself are in the Museum of Comparative Zoology, here usually abbreviated as M.C.Z.; by Miss Cheesman, in the British Mus(eum); by Toxopeus, returned to the Leiden Mus(eum), for distribution; and by Biró, in the Hungarian National Mus(eum). The United States National Museum (Washington) is abbreviated as U.S.N.M.; the American Museum of Natural History (New York), as A.M.N.H. Other abbreviations are, I think, immediately intelligible.

Previous work on Carabidae of New Guinea and neighboring areas. Very little has been published on the New Guinean carabid fauna as such, although a number of species have been described or recorded from the island casually or in revisions not primarily concerned with New Guinea. However two references are worth giving because they mark efforts of students of adjacent carabid faunas to extend their work to New Guinea. One is a two-part contribution by an Australian, Sloane, on "New *Carabidae* from German New Guinea and its Dependencies" and "Further *Carabidae* from German New Guinea and its Dependencies" published in *Deutsche Entomologisches Zeitschrift* for 1907, pp. 177-185, 467-474. Twenty-odd species are described or referred to in this work. The other is Andrewes' "Catalogue of Indian Insects. Part 18 — Carabidae" (Calcutta: Government of India, Central Publications Branch, 1930), which includes all species known from New Guinea in many of the Oriental genera (indicated by asterisks) but not in all genera.

Something more should be said about the work done by Sloane and Andrewes not on the fauna of New Guinea but on adjacent related faunas.

T. G. Sloane (1858-1932) was an Australian pastoralist, manager of a sheep station in New South Wales. Study of Carabidae was his avocation. He published about 60 papers on Australian carabids between 1881 and 1923, with final notes on paussids published posthumously in 1933. His papers include a number of important revisions and keys as well as descriptions of more than 600 new species. He worked in isolation and was not able to study the older types of Australian Carabidae in European museums. However his work was done with care and good judgment, and went a long way toward putting Australian Carabidae in practical working order. His collection was, unfortunately, allowed to deteriorate during the last years of his life.

It is now in good care at the Division of Entomology, Commonwealth Scientifie and Industrial Research Organization, at Canberra.

H. E. Andrewes (who died in 1950 at the age of 87) was at one time employed in the Indian Forest Service but was forced to leave India because of eye trouble. He retired from business at an early age and deliberately set himself the task of revising the Carabidae of the Oriental Region. For this purpose he accumulated a large private collection, and worked primarily on it and on the collection of the British Museum — he lived in London after his retirement. The results of his work were 122 papers, published from 1919 to 1947, including a series of important revisions, faunal lists (Philippines, Sumatra, Mt. Kinabalu), the useful catalogue and bibliography of "Indian" Carabidae referred to above, two fine volumes on Carabidae in the *Fauna of British India* (unfortunately he was not able to complete this work), and descriptions of hundreds of new species. In the course of his work he was able to visit most European museums and see the types of most known Oriental Carabidae. He was therefore able to put almost all the old names in their proper places, and to bring practical taxonomic order to the whole Oriental carabid fauna. He did this with good, conservative judgment. He left the Oriental carabids in shape for further work. His collection has now been added to the already outstanding collection of Oriental Carabidae at the British Museum.

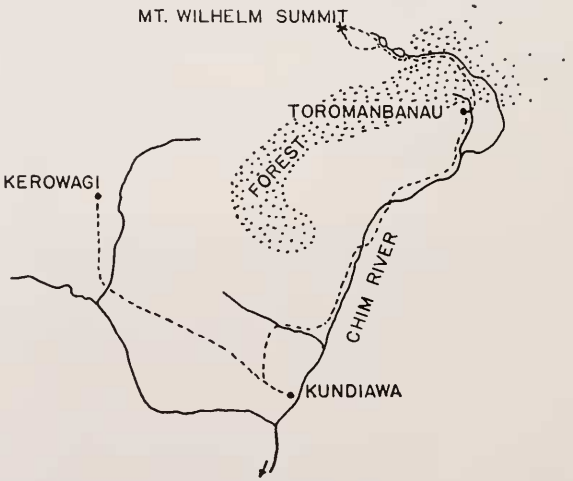
Without Sloane's work on Australian Carabidae and Andrewes' on Oriental ones it would be impossible to understand the nature and geographical relationships of the New Guinean carabid fauna.

History and background of the present work. I was a member of the Harvard Australian Expedition of 1931-1932, and as a result of it I began to accumulate a working collection of Australian Carabidae at the Museum of Comparative Zoology. During that trip I reached the middle part of the Cape York Peninsula and felt the pull of New Guinea, although I could not go there then.

During World War II I did go to New Guinea, as an army entomologist, and saw most of the occupied localities from Milne Bay to Sansapor. Two principal collections of Carabidae were made on the island while I was temporarily free of army duties. The first was at Dobodura, inland from Oro Bay and not far

from Buna, on the north side of Papua. I spent more than four months in hospital there. The hospital was in an opening in interior rain forest (different from and much richer than coastal forest) beside a fine, small river. My right arm was in a cast for the first two or three months, but I had a fresh pair of heavy army pajamas (almost the equivalent of an untailored linen suit) daily, heavy army shoes, enough vials of alcohol, and an understanding hospital commander who gave me permission to come and go as I liked. I was there from March to July, 1944, long enough to cover many square miles of rain forest, swamp, and grassland. Most of my collecting was done one-handed, but practice improved that. It was during this time that I gradually learned most of the habitats of Carabidae in New Guinea.

My second principal collection on New Guinea was made on the Bismarck Range, North-East New Guinea, where I was fortunate enough to be able to go during a two-weeks leave in October, 1944, thanks to the courtesy and aid of ANGAU, the Australia New Guinea Administrative Unit of the mandated area. I flew in from Lae in a C-47, which picked up vegetables for army hospitals. The plane landed at the Kerowagi airstrip, one of about seven grass airstrips made on the Bismarck Range



Sketch map of route to Mt. Wilhelm, Bismarck Range, North-East New Guinea. Scale: one inch = eight miles.

before the war for use of prospectors and missionaries. The strips lie a mile or more above sea level. From Kerowagi I went by jeep to Kundiawa, from there on foot up the valley of the Chim River to Toromanbanau, and thence to the summit of Mt. Wilhelm, the highest peak in the British half of New Guinea, reputedly 15,400 feet. During this trip I walked first through grassy, inhabited valleys at altitudes of from about 5,000 to 7,500 ft., then (above Toromanbanau) through mountain rain forest which became low, dense, moss-covered cloud forest toward timberline (about 11,000 ft.), then up steep slopes of tussock grass past two mountain lakes of glacial origin, and finally onto the rocks of the summit. Collecting of Carabidae, especially in the mountain forest, was very fine. This is not the place to describe this trip in more detail, but I give here a sketch map of my route, for the information of other collectors and of taxonomists working on my material.

During the war I collected also some useful material in the Philippines. After the war, as a preliminary to actual study of New Guinean (and Philippine) Carabidae, I made an effort to bring together at the Museum of Comparative Zoology a basic collection of Carabidae of the Oriental Region and Indo-Australian Archipelago, and to become familiar with them. Before the war the Museum had purchased several thousand specimens of carabids from South India, from Mr. P. Susai Nathan. This and some other, older material was put in order and partly determined, and additional Oriental Carabidae were obtained from other sources. Especially useful were specimens secured by exchange from the late H. E. Andrewes (see above), which were not numerous but which represented particularly important, identified genera and species, and a good set of Javan Carabidae received by exchange from Mr. C. J. Louwerens. All this would still have left me with a very fragmentary collection and insufficient familiarity with Oriental Carabidae if I had not been able to spend six months at the British Museum during the winter of 1947-48. This was made possible by a fellowship from the John Simon Guggenheim Memorial Foundation. At the British Museum I was able to see, besides other important material, Andrewes' collection of Oriental Carabidae including most of his types, and I arranged an exchange that added about a thousand identified species to the Museum of Comparative Zoology's Oriental carabid collection.

As a further preparation for work on New Guinean (and Philippine) Carabidae, I compiled an up-to-date list of the species of the family known from the Indo-Australian Archipelago, with a chronological bibliography of each species. The list is based on the Junk-Schenkling Catalogue, with additional names and references added from other sources.

Special preparations have been made to relate the Carabidae of New Guinea to those of Australia too. The working collection of Australian carabids at the M.C.Z., begun in 1931-1932 (see above), has been increased by purchase and exchange and by a second trip to (eastern) Australia, partly supported by a second fellowship from the Guggenheim Foundation, from December 1956 to June 1958. During this time my wife, son, and I were in the field almost continuously, traveling and living in a small truck, except for four months (May through August 1957) when we were in winter quarters in Canberra. At Canberra, incidentally, I was able to see and study Sloane's collection of Australian Carabidae, with most of his types. Our field work in 1956-1958 covered the forested eastern edge of Australia from southern Tasmania to northern Cape York. The Carabidae we obtained in North Queensland, especially on the Cape York peninsula in January and May-June 1958, have proved especially useful for comparison with New Guinean forms.

In order to complete preparation for work on Australian Carabidae, I have compiled a list and bibliography of the Australian species based on the Junk-Schenkling Catalogue, amplified and brought up to date.

Policies and methods: stages of faunal taxonomy. Three stages can be recognized in taxonomic study of a fauna of any animals, although the stages are usually not sharply separated. The first stage (comparable to alpha-taxonomy) is the random description of species as they happen to fall into the hands of specialists. The descriptions are likely to be widely scattered in different journals, and the specimens on which they are based are likely to be widely scattered in museums and private collections. Some of the descriptions are likely to be poor and some species are likely to be put in wrong genera or even wrong tribes. Nevertheless, even this initial stage in faunal taxonomy serves a useful purpose. The scattered descriptions are listed in the *Zoological Record*, and they advertise to interested persons some preliminary information about the nature of the fauna

and where specimens from it are preserved. However, there is no great loss and often much gain if the first stage is omitted and if taxonomists can go directly to the second stage, which is to put the fauna as a whole in preliminary order by appropriate taxonomic methods. This is equivalent to beta-taxonomy.

By appropriate taxonomic methods I mean methods like those of Sloane and Andrewes, and many comparable workers in other parts of the world. The methods are essentially subjective: comparison of specimens, detection of similarities and differences, and reaching of conclusions based primarily on the personal judgment and experience of the taxonomist, not on statistical analysis or other objective tests. This kind of taxonomy is not necessarily typological. Many taxonomists who practice it are conscious that they are dealing with samples of populations and are deeply interested in variations in populations. The great advantage of this kind of taxonomy is that it can be done comparatively rapidly, so that one man can cover a whole large fauna in a reasonable time and determine its general composition and geographical relationships and something of its origin and evolution. This general information is important. To get it — that is, to get an understanding of the fauna as a whole — the second-stage taxonomist has to bypass too-difficult cases, including cases that cannot be solved with the material immediately available or that require time-consuming study of situations outside the actual fauna being studied.

Third-stage taxonomy (equivalent to gamma-taxonomy) is the critical study of selected cases that cannot be solved promptly and satisfactorily by personal judgment. Some cases require world-wide revisions for their solution. Others require laborious dissections or study of larvae. Still others require complex statistical treatment. And finally some cases may require genetic breeding. This kind of work reveals relationships and sibling species that second-stage taxonomists miss, and confirms (or reverses) second-stage taxonomists' conclusions in many details. In other words third-stage taxonomy solves the problems that second-stage taxonomy leaves. But good second-stage taxonomy shows where problems are and presents them for third-stage treatment.

The present work is second-stage taxonomy. It is an attempt to classify all the Carabidae known from New Guinea (but there are probably hundreds of species still to be discovered especially in the mountains) and in general to put the whole fauna in

order within practical limits. The limits are imposed mainly by time. If I should set standards too high or allow myself to be delayed by details, I would never finish this work as a whole.

Methods: details. My methods of making descriptions, citing localities, making measurements, etc. are described in the introduction of Part II of the present work (pp. 91ff.). However, although I shall try to be reasonably consistent in editorial details, I shall not follow a single model exactly but shall vary treatment according to the requirements of each group. Moreover, I expect to vary the treatment to fit the importance or interest of each group. I have already (Part II) treated the Agonini more thoroughly than I plan to treat any other tribe of Carabidae in New Guinea, because I have a special interest in this tribe and because the Agonini is the principal tribe that has radiated on the high mountains of New Guinea. The present part, Part I, includes some smaller groups of special interest, including the Pterostichini, some of which have undergone wing atrophy and become flightless. On the other hand, the Cicindelinae are outside my usual sphere of interest and (in New Guinea) include no known flightless species except *Tricondyla aptera,* and I have treated them comparatively briefly. But these are special cases. The bulk of the present part of my work is concerned with small ground-living Carabidae (*Clivina, Tachys,* etc.) which, in New Guinea, have been poorly known until now, but of which special collecting methods have yielded much new material. These will be given something like average treatment. Part III will include a larger proportion of previously known species, most of them winged, including Harpalini which are dominant especially in open areas (but a few occur in rain forest), and also many Lebiini which are dominant arboreal Carabidae especially in rain forest (but some occur in open areas). The circumstances under which my collecting was done, particularly the difficulty of using a net one-handed, limited my catch of arboreal forms, so that my material of them is comparatively scanty and will be treated comparatively briefly.

Localities. A preliminary outline map of New Guinea with important carabid localities was included in Part II (p. 93). This map will probably be reproduced in Part IV, with additional localities added. One locality, however, should be mentioned now. It is Alfred Russell Wallace's "Dorey" or "Dory." Dorey is on the northeast corner of the Vogelkop, and Wallace

did go there (from Ternate) and spent 3 or 4 months there, beginning about the end of March, 1858. However, his specimens labeled from Dor(e)y include a number of common Oriental species of Carabidae that reach Celebes or the Moluccas but, except for Wallace's records, are not recorded from New Guinea. I have encountered so many such cases that I am convinced that Wallace accidentally mixed his collections and that many of his specimens labeled as from Dorey are really from Celebes or the Moluccas. Cases here noted include *Clivina castanea* and *wallacei*, *Apotomus*, *Tachys sericeus* and *haliploides*, *Abacetus convexiusculus*, and *Loxandrus celebensis* (see under *L. medius*). The names of these and other species, and higher groups, previously recorded from New Guinea on what I consider doubtful or erroneous grounds are put in parentheses in the following pages.

Ecology. The ecological information accompanying my specimens is scanty. It was limited by war-time conditions, by the fact that I had little time for collecting and a limited supply of vials and alcohol, so that I often had to put many specimens together under one label for each locality. I kept a list of species recognized, but many of the smaller ones were not distinguished in the field. Nevertheless, I can usually say whether a particular species was taken in rain forest or not, whether it was associated with open water or not, or whether it was arboreal. This is not ecology in the detailed, modern sense, but it permits a rough ecological classification of the species which is useful in analyzing the nature and history of the fauna.

Subspecies. The concept of subspecies has been critically re-examined by several authors recently. The re-examination is good in itself, and some criticisms of the subspecies concept have been valid, although the criticisms apply more to continental situations, where distributions are continuous, than to island populations, where distributions are interrupted. New Guinea is a very large island, on which three kinds of situations occur that can be expressed by trinomials — by use of subspecies. First, a population that is spread over the whole of New Guinea may be slightly different from related populations on other islands. Second, a species that is widely distributed on New Guinea may occur in a habitat that is discontinuous on the island. Such a species may be broken into slightly different, geographically isolated subpopulations on different mountain tops, or in different river valleys, etc. Third, a species may be

widely and more or less continuously distributed on New Guinea but may vary from locality to locality nevertheless. I am prepared to make subspecies in all of these cases, if that seems the best way to make the situation clear. In the first two kinds of situations listed above, the subspecies are isolated populations and are probably often incipient species. In the third case, in which geographical variation occurs in presumably continuous populations, recognition of subspecies is at least a useful technique of second-stage taxonomy, which helps put a whole fauna in understandable order. However, I have made subspecies very sparingly, and only when I think they really do clarify situations.

Variation. During the writing of this paper I have become increasingly impressed by the amount of variation shown by many species. Variation of certain characters among Agonini has been discussed in Part II (pp. 94ff.). In the present part, cases of *individual* variation are noted that affect supposedly specific, generic, or even tribal characters. In the genus *Clivina*, for example, the number of elytral striae that are free at base has been supposed to be characteristic of whole species-groups, but several species in New Guinea vary individually in this respect, with either 3 or 4 free striae in different individuals (see description of *C. kulti*, notes under *biroi*, and descriptions of *puncticeps, deälata, rufula, erugata*, and *subfusa*). The number of so-called "fixed" punctures on the 3rd elytral interval varies individually too in some species of *Clivina* (see description of *C. kulti*, notes under *erugatella*). In *Tachys truncatus* I have found what seems to be dimorphism in presence or absence of conspicuous foveae on the mentum, a character heretofore supposed to be constant within species and usually within species-groups. Among certain Pterostichini I have found cases of individual variation in presence or absence of the basal elytral margin (usually considered a generic character, but it varies individually in *Platycoclus archboldi*) and in presence or absence of interruptions of the elytral margin (usually considered a tribal character of Pterostichini, but individually variable in *Paraloma fortis*). *Paraloma fortis* exhibits striking asexual dimorphism in form of prothorax. And *Microschemus quadrimaculatus* (tribe Panagaeini) is apparently dimorphic in coloration. Much other, minor variation is noted in various cases in the following pages, but I am sure that what I have detected is only a small part of all the variation that really occurs in the

species in question. Third-stage taxonomists should discover much more of it. A number of cases of wing atrophy and five of apparent geographical or individual wing dimorphism (*Clivina decälata* and *erugatella, Lesticus politus, Platycoelus depressus, Loxandrus latus*) are noted now, but full discussion of variation of wings of Carabidae in New Guinea will be postponed to Part IV.

TAXONOMIC SECTION

Subfamily CICINDELINAE

The tiger beetles are treated as a subfamily of Carabidae in the Junk-Schenkling *Coleopterorum Catalogus,* and I have included them here for the sake of completeness and because of their general interest and zoogeographic importance. However, they do not fall within my usual range of study, and I have therefore treated them in less detail than the other carabids.

Seven genera of "tigers" are represented in New Guinea. Three of them (*Tricondyla, Prothyma, Therates*) have probably extended to New Guinea from the Orient, more or less recently. Two (*Megacephala, Distipsidera*) have evidently extended from Australia to (southern) New Guinea. One (*Caledonomorpha,* with 2 species) is endemic to New Guinea and is in fact known only from the eastern part of the island. And the final genus (*Cicindela*) is world-wide and is represented in New Guinea by about 8 stocks with various geographical relations (p. 341). *Tricondyla* is flightless. All other tiger beetles in New Guinea are winged and able to fly, so far as I know.

Our present understanding of the classification and general distribution of tiger beetles is the result of a life-time of study by the late Dr. Walther Horn, who coordinated the works of many earlier authors and added immensely to them. Of Horn's many publications, the outstanding ones that cover the Cicindelinae as a whole are Fascicule 82 of Wytsman's *Genera Insectorum* (1908-1915) and Pars 86 of the Junk-Schenkling *Coleopterorum Catalogus* (1926 — in 1959 it was still available from Uitgeverij Dr. W. Junk, Van Stolkweg 13, The Hague, Holland). In treating the older species of the subfamily I usually refer to this *Coleop(terorum) Cat(alogus)* for synonymy and references rather than repeat them in full. On the other hand, I shall not take space to cite the *Catalogus* when it adds nothing to knowledge of particular species in New Guinea. There is an out-of-date

but still useful revision of the "Cicindelidae" of Australia, by T. G. Sloane, in the *Proceedings of the Linnean Society of New South Wales*, Vol. **31**, pp. 309-360, pls. XXV-XXXI, 1906.

Key to Tribes and Genera of Cicindelinae of New Guinea

1. Metepisterna very narrow, deeply longitudinally channeled ("Alokosternale Phyle"); 4th tarsal segments asymmetrical (tribe Collyrini); elytra soldered together, inner wings minute, vestigial; form antlike, 20-25 mm (in New Guinea) (p. 334) . . . *Tricondyla*
— Metepisterna wider, not deeply channeled ("Platysternale Phyle"); elytra not soldered, inner wings fully developed (in New Guinea) 2
2. Pronotum with anterior lateral angles (seen from sides) prominent, projecting farther forward than anterior margin of prosternum; head wide but eyes smaller and less prominent than usual (tribe Megacephalini) (p. 335) . . . . . *Megacephala*
— Pronotum with anterior lateral angles not prominent (tribe Cicindelini) 3
3. Fourth segments of all tarsi very short, wide, densely pubescent below; color usually dark purplish or greenish above, often boldly banded with yellow (p. 338) . . . . . *Therates*
— Fourth tarsal segments slender, not densely pubescent below 4
4. At least part of lower surface of body with decumbent white pubescence (p. 340) . . . . . *Cicindela*
— Lower surface without decumbent pubescence 5
5. Labrum not toothed; elytra spined (p. 336) . . *Caledonomorpha*
— Labrum toothed; elytra not spined 6
6. Clypeus without setae (p. 336) . . . . . *Prothyma*
— Clypeus with a pair of conspicuous setae (p. 337) . . . . . *Distipsidera*

Tribe COLLYRINI

Genus TRICONDYLA Latreille

Latreille 1882, *in* Latreille and Dejean, Hist. Nat. et Iconographie Coleop. d'Europe **1**, p. 65.

Horn 1926, Coleop. Cat., Cicindelinae, p. 22 (see for additional references etc.).

TRICONDYLA APTERA (Olivier)

Olivier 1790, Entomologie **2**, no. 33, p. 7, Pl. 1, fig. 1 (*Cicindela*).

Horn 1926, Coleop. Cat., Cicindelinae, p. 27 (see for synonymy and additional references).

van Nidek 1959, Nova Guinea (new series) **10**, pp. 177, 181.

Notes. Tricondyla aptera is a well known, antlike, big-eyed, flightless tiger beetle, 20-25 mm. long, which ranges (with some

variation) from **New Guinea** (and the Cape York Peninsula of **Australia**) to the **Moluccas** and **Philippines**, **Timor**, and the **Solomons** and **New Hebrides**. It is a very common species, "represented in every consignment from New Guinea and surrounding islands" (van Nidek). It runs on tree trunks and fallen trees in rain forest by day. The genus is primarily Oriental; *T. aptera* evidently represents a rather recent extension of a *flightless* Oriental stock into the Australian Region.

Tribe MEGACEPHALINI

Genus MEGACEPHALA Latreille

Latreille 1802, Hist. Nat. Crustacés et Insectes **3**, p. 79.
Sloane 1906, Proc. Linn. Soc. New South Wales **31**, 317–327.
Horn 1926, Coleop. Cat., Cicindelinae, p. 61 (see for synonymy and additional references).

Notes. Megacephala (*sensu lato*) is discontinuously distributed, occurring in Africa (not Madagascar) and part of the Mediterranean region and south*western* Asia, in Australia and southern New Guinea, and in tropical and warm temperate America. There are about 20 Australian species, rather diverse in form and color, some fully winged, others flightless. They are usually found running on the ground near water at night, and some of them come to light. The genus is represented in New Guinea only by 2 of the winged Australian species that are recorded from Merauke in the south-coastal region of Netherlands New Guinea.

Both the species that reach New Guinea are dark with metallic reflections, with the outer margins of the elytra yellow or reddish, the pale color extending onto the disc of each elytron about ⅓ from base. The following key to the species is based on Sloane (*loc. cit.*); I have seen no specimens of this genus from New Guinea.

Key to Species of Megacephala Recorded from New Guinea

1. Prothorax with lateral margins almost entire, cariniform behind (as well as in front of) posterior transverse impression of pronotum (p. 336) . . . . . *australasiae humeralis*
— Prothorax with lateral margins obliterated posteriorly, not cariniform behind posterior transverse impression (p. 336) . . . *bostocki*

Megacephala australasiae humeralis Macleay

Macleay 1863, Trans. Ent. Soc. New South Wales **1**, p. 9.
Horn 1913, Nova Guinea **9**, p. 409.
—— 1926, Coleop. Cat., Cicindelinae, p. 70 (see for synonymy and additional references).

Notes. This species is widely distributed in the northern half of Australia and is recorded also from Merauke, southern **Neth. N.G.**, by Horn (1913).

Megacephala bostocki Castelnau

Castelnau 1867, Trans. R. Soc. Victoria **8**, p. 36.
Horn 1913, Nova Guinea **9**, p. 409.
—— 1926, Coleop. Cat., Cicindelinae, p. 70 (see for synonymy and additional references).

Notes. Like the preceding, this northern Australian species is recorded from Merauke, southern **Neth. N.G.**, by Horn (1913). It is curious that these two very similar species should be known from New Guinea only from a single source, and I suspect some mistake, although I have no other evidence of it.

Tribe CICINDELINI

Genus Prothyma Hope

Hope 1838, Coleopterist's Manual **2**, pp. 12, 27.
Horn 1926, Coleop. Cat., Cicindelinae, p. 96 (see for synonymy and additional references).

Prothyma papua Darlington

Darlington 1947, Psyche **54**, p. 242, fig. 2.

Notes. This species is known only from the north side of Milne Bay, **Papua**, at the eastern tip of New Guinea. Its habits are unknown. It represents a primarily African-Oriental genus which occurs also in Madagascar, etc., temperate China, and Mexico, and which is represented by aberrant subgenera in Celebes, northwestern Australia, New Caledonia, Fiji (an undescribed species) and Samoa.

Genus Caledonomorpha Horn

Horn 1897, Ann. Mus. Civ. Genova (Genoa) **37**, p. 270.

Caledonomorpha jordani Horn

Horn 1897, Ann. Mus. Civ. Genova (Genoa) **37**, p. 270.
—— 1910, *in* Wytsman, Genera Insectorum, Fasc. 82, p. 179, pl. 11, fig. 12.
——1932 Rec. S. Australian Mus. **4**, p. 551 (*Caledonica*).
Darlington 1947, Psyche **54**, p. 242 [type restriction].

Notes. Known localities for *jordani* are the Astrolabe Mts., Mt. Lamington, Dobodura, and Fergusson Is., all of which are in **Papua** east of 47°E., on or near what might be called the Bird's Tail of New Guinea. Specimens that I collected near Dobodura were running and flying by day on stones and low foliage along small, rapid brooks in rain forests in foothills of the Owen Stanley Range.

Caledonomorpha milneana Darlington

Darlington 1947, Psyche **54**, p. 241, fig. 1.

Notes. This second species of *Caledonomorpha* is known only from the north side of Milne Bay, **Papua**, at the eastern tip of New Guinea, collected Dec. 1943, by myself.

Genus Distipsidera Westwood

Westwood 1837, Mag. Zool. Bot. **1**, p. 251.
Horn 1926, Coleop. Cat., Cicindelinae, p. 105 (see for additional references etc.).

Notes. *Distipsidera* occurs in the northern half of the eastern coastal region of Australia and in southern New Guinea. In Australia the larger species are usually found hunting (by day) on the trunks of *Eucalyptus* trees in open forest; some of the smaller species, on tree trunks in rain forest. One large and one small species occur in New Guinea, but their habits there are unknown.

Distipsidera papuana Gestro

Gestro 1879, Ann. Mus. Civ. Genova (Genoa) **14**, p. 556.

Notes. The types of *papuana* came from the Katau (Binaturi) and Fly R., southern New Guinea (southern **Papua**). The species is described as small, about 12 mm. long, purplish black with elytral apices greenish and a pale humeral spot and median fascia (not reaching suture) on each elytron.

Distipsidera thierfelderi Horn

Horn 1925, Ent. Mitteilungen **14**, p. 179.

Notes. Horn's single specimen of this species was from the south coast of **Neth. N.G.** The species is much larger than *papuana*, 19 mm. without the labrum, and is described as black with slight purplish or greenish reflections, with pale maculae on the elytra.

Genus Therates Latreille

Latreille 1817, *in* Cuvier, Règne Animal **3**, p. 179.

Horn 1926, Coleop. Cat., Cicindelinae, p. 110 (see for synonymy and additional references).

Notes. This is a primarily Oriental genus which extends to New Guinea and the Solomons but not to Australia. The species occur on low foliage in the undergrowth of rain forest.

Key to Species of Therates Recorded from New Guinea

1. Color above (except labrum) greenish or bluish without pale markings 2
— Conspicuously bicolored 3
2. Larger, *c.* 16-21 mm. (p. 338) ..... *labiatus*
(See also *caligatus*, p. 340.)
— Smaller, *c.* 7½ mm. (p. 339) ..... *cyaneus*
3. Metallic greenish or bluish, with a conspicuous yellow or reddish band across base of elytra (sometimes an additional pale blotch near middle of each elytron) 4
— Not metallic, more extensively pale 5
4. Larger, *c.* 13-15 mm. (p. 339) ..... *basalis*
— Smaller, *c.* 9 mm. (p. 339) ..... *festivus*
5. Head (except labrum) and prothorax piceous, elytra testaceous with a variable, sometimes divided piceous band or blotch behind middle; length *c.* 10-12 mm.; (occurrence in New Guinea doubtful) (p. 340) (*fasciatus*)
— Color testaceous with front of head and post-median elytral band dark; *c.* 8 mm. (p. 340) ..... *chaudoiri*

Therates labiatus (Fabricius)

Fabricius 1801, Systema Eleutheratorum **1**, p. 232 (*Cicindela*).

Horn 1926, Coleop. Cat., Cicindelinae, p. 110 (see for synonymy and additional references).

van Nidek 1959, Nova Guinea (new series) **10**, pp. 177, 181.

Notes. *T. labiatus* is widely distributed and common in **New Guinea** and occurs also on the **Aru** and **Kei** Is., and it extends west and north to the **Moluccas**, **Celebes**, and the **Philippines**, and east to the **Solomons.**

Therates basalis Dejean

Dejean 1826, Species Coléop. **2**, p. 437.
Horn 1926, Coleop. Cat., Cicindelinae, p. 111 (see for synonymy and additional references).
van Nidek 1959, Nova Guinea (new series) **10**, pp. 179, 182.

Notes. This is the only species of the genus besides *labiatus* that is common and widely distributed in **New Guinea**. It extends to several small, close-lying islands including **Waigeu** and **Misol** (but not farther west), and to the **Solomons**. Van Nidek discusses variation in dentition of the labrum.

Therates festivus Boisduval

Boisduval 1835, Voyage Astrolabe, Faune Ent. **2**, p. 13.
Horn 1926, Coleop. Cat., Cicindelinae, p. 111 (see for synonymy and additional references).
?rothschildi Horn 1896, Deutsche Ent. Zeitschrift **1896**, p. 150.
van Nidek 1959, Nova Guinea (new series) **10**, pp. 179, 182.

Notes. Horn (*loc. cit.*) records typical *festivus* from **New Guinea** and **Waigeu**, and from Misol in the **Moluccas**; van Nidek, from Misol, and from Sorong and Japen Is., **Neth. N.G.**

The form *rothschildi* Horn, with a spot near the middle of each elytron as well as the basal fascia pale, was described from Humboldt Bay, **Neth. N.G.**, and later (1926) listed also from Japen Is. ("Jobi"); van Nidek records another specimen from Japen Is. and there is one in the M.C.Z. from lower Busu River, Huon Peninsula, **N-E. N.G.**, collected May 4, 1955, in lowland rain forest, by E. O. Wilson. I doubt if *rothschildi* is even a good (geographical) subspecies.

Therates cyaneus Chaudoir

Chaudoir 1861, Bull. Soc. Nat. Moscou **34**, Part 2, No. 4, p. 357.
Horn 1926, Coleop. Cat., Cicindelinae, p. 111.

Notes. **New Guinea**, **Misol**, and **Celebes** is the distribution given by Horn (*loc. cit.*) for *cyaneus*.

Therates chaudoiri Schaum

Schaum 1860, Berliner Ent. Zeitschrift **4**, p. 185, pl. 3, fig. 1.
Horn 1926, Coleop. Cat., Cicindelinae, p. 111 (see for synonymy and additional references).

Notes. Horn records *chaudoiri* only from northwestern (**Neth.**) **New Guinea** and **Celebes**.

(Therates fasciatus [Fabricius])

Fabricius 1801, Systema Eleutheratorum **1**, p. 244 (*Cicindela*).
Horn 1926, Coleop. Cat., Cicindelinae, p. 112 (see for synonymy and additional references).

T. fasciatus has been recorded from New Guinea but Horn questions its occurrence there. It does occur in the Philippines, Celebes, and Moluccas east at least to Halmahera. Whether it extends to (western?) New Guinea remains to be discovered.

(Therates dimidiatus Dejean)

Dejean 1825, Species Coleop. **1**, p. 159.
Horn 1926, Coleop. Cat., Cicindelinae, p. 113.

T. dimidiatus is another species of which Horn questions old records from New Guinea. It inhabits the Malay Peninsula, Sumatra, Java, Borneo, and small islands in that vicinity. Its occurrence in New Guinea is therefore unlikely. It is a small species, resembling *festivus* but with spined elytra.

Therates caligatus Bates

Bates 1872, Ent. Month. Mag. **7**, p. 285.
van Nidek 1959, Nova Guinea (new series) **10**, p. 178, fig. 1 (left).

Notes. This species was described as from the Philippines but the locality may be doubtful. Van Nidek records it from the islands of **Misol** and **Waigeu** just west of the western tip of New Guinea; it has not been recorded from the mainland of New Guinea itself but may occur there. According to van Nidek it resembles *labiatus* but is smaller, with black tibiae and tarsi, and sutural angles of elytra more produced than in *labiatus*.

Genus Cicindela Linnaeus

Linnaeus 1758, Systema Naturae, ed. 10, **1**, p. 407.
Horn 1915, *in* Wytsman, Genera Insectorum Fasc. 82, p. 239.
—— 1926, Coleop. Cat., Cicindelinae, p. 127 (see for synonymy and additional references).

Notes. In the usual, broad sense this genus is world-wide (excepting some cold places and some remote islands) and includes about half of all existing species of tiger beetles — almost three-fourths of those of New Guinea. The species of the Australian Region, including New Guinea, are separately listed by Horn (1915, pp. 311-321; 1926, pp. 193-203), and I have followed his arrangement, putting his group-headings in parentheses, and interpolating recently described species.

According to Horn's (second) diagram of the phylogeny and geographical history of *Cicindela* (1915, pl. 23), the species of the genus in New Guinea represent about 8 original stocks, listed below roughly in order of age, with the oldest first.

1. The *tetrachoides* and *latreillei* groups represent a phylogenetically isolated (old?) stock that is confined to the Australian Region and has produced endemic groups in Australia as well as on New Guinea.
2. *Cicindela ancorifera,* on New Guinea, represents a stock, probably originally derived from the Orient, that has diversified especially on New Zealand (*sic*) and that is represented by endemic species-groups on Australia too.
3. The very small (usually considerably less than 10 mm.) species of the *placida-funerata, variolosa, boisduvali,* and *guineensis* groups have radiated primarily on New Guinea. Horn's diagram does not make clear whether or not they are derived from the same ancestral stock as No. 2.

4-5. *C. maino* and *denticollis* are endemic species derived from Oriental stocks.

6-8. *C. decemguttata, discreta,* and *semicincta* are widely distributed species shared with (and probably recently derived from) the Orient.

There are so many species of this genus on New Guinea and I know so few of them that I have not tried to make a key to them or even to give recognition characters. Horn characterizes the groups in *Genera Insectorum* (pp. 313-321) and summarizes the distinguishing characters of a number of the very small species (of the *placida-funerata* group, etc.) in *Deutsche Ent. Zeits.* for 1904, p. 428.

Most species of *Cicindela* hunt (by day) on the ground in open places, but a few, especially some small species, occur on low foliage of undergrowth of rain forest, often along brooks or partly cleared tracks where some sunlight comes through the forest canopy.

(Group *tetrachoides*)

CICINDELA TETRACHOIDES Gestro

Gestro 1876, Ann. Mus. Civ. Genova (Genoa) **8**, p. 514.
Horn 1926, Coleop. Cat., Cicindelinae, p. 194 (see for synonymy and additional references).
van Nidek 1953, Psyche **60**, p. 155.
—— 1959, Nova Guinea (new series) **10**, pp. 179, 182.

Notes. Horn lists this species from **New Guinea** and eastern **Ceram**. In New Guinea, it is common and widely distributed at low altitudes, and I found it on the Bismarck Range at 5,000 ft. or higher. It occurs on the ground in open places and is, I think, partly nocturnal.

CICINDELA INAEQUIDENS van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 179.

Notes. van Nidek distinguishes this species (from the preceding one) by its more evenly punctulate elytra; sides of elytra near apex strongly bent inwards; sutural angles of elytra denticulate in female. The types of this and of the preceding species are from Dilo, south coast of **Papua**, but this as well as the preceding species, is widely distributed in **New Guinea**, and this occurs also on Morotai Is., **Moluccas**. It would be interesting to know whether their habits differ.

(Group *latreillei*)

CICINDELA LATREILLEI Guerin

Guerin 1830, *in* Duperrey, Voyage Coquille, Zool. **2**, Part 2, First Div., p. 57 (*latreillii*), Atlas, Ins. pl. 1, fig. 5, a, b.
Horn 1926, Coleop. Cat., Cicindelinae, p. 194 (see for synonymy and additional references).
van Nidek 1959, Nova Guinea (new series) **10**, p. 182.

Notes. The *latreillei* group is confined to New Guinea including Japen Is. The species *latreillei* is recorded from Dorey in western **Neth. N.G.**; **Japen Is.**; lower slopes of the Snow Mts. at 800-1500 m. (*c.* 2,600-4,875 ft.); and the Fly R., **Papua**.

CICINDELA LATREILLEI VIRIDITHORACICA van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 180.

Notes. Described from Klamono (Vogelkop) and Geelvink Bay, **Neth. N. G.** The status of this form is not yet clear. It can hardly be a geographical subspecies.

Cicindela velutina van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 182.

Notes. A species of the *latreillei* group, described from 10 specimens collected around Sigi Camp and Lower Mist Camp, Snow Mts., **Neth. N. G.** The altitudes are between 1350 and 1700 m. (a little below or above 5000 ft.).

Cicindela viridimicans van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 183.

Notes. Another new species of the *latreillei* group, described from 15 specimens from Araucaria Camp, Rattan Camp, and Lower Mist Camp, on or near the lower slopes of the Snow Mts., **Neth. N. G.** Altitudes are from 800 to 1700 m. (*c.* 2,600-5,525 ft.).

Cicindela alticola van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 183.

Notes. Still another species of the *latreillei* group, described from Top Camp, 2100 m. (*c.* 6,825 ft.) in the Snow Mts., **Neth. N. G.**

Cicindela rudolf-bennigseni Horn

Horn 1912, Ent. Mitteilungen **1**, p. 306.
van Nidek 1959, Nova Guinea (new series) **10**, p. 184.

Notes. The type locality is Sattelberg, Huon Peninsula, **N-E. N. G.**; van Nidek records the species from mountain slope above Bernhard Camp, 750 m. (*c.* 2,400 ft.), and Araucaria Camp, 800 m. (*c.* 2,600 ft.), **Neth. N. G.**

Cicindela nigrivestis van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 184.

Notes. The fourth new species of the *latreillei* group described by van Nidek in the paper cited. It is known from 4 specimens from mountain slope above Bernhard Camp, near Araucaria Camp, and Rattan Camp. Altitudes are 750-1200 m. (*c.* 2,400-3,900 ft.).

Cicindela darlingtoni van Nidek

van Nidek 1953, Psyche **60**, p. 155, figs. 6, 7.

Notes. The types are from Dobodura, **Papua**.

(Group *decemguttata*)

CICINDELA DECEMGUTTATA URVILLEI Dejean

Dejean 1831, Species Coléop. **5**, p. 225 (*durvillei*).
Horn 1926, Coleop. Cat., Cicindelinae, p. 196 (see for additional references etc.).
van Nidek 1953, Psyche **60**, p. 156, figs. 4, 5.
—— 1957, Treubia **24**, pp. 1–2, map.
—— 1959, Nova Guinea (new series) **10**, pp. 180, 184.

Notes. According to Horn (*loc. cit.*), typical *decemguttata* occurs in **Celebes**, the **Moluccas**, **Kei Is.**, etc.; subspecies *urvillei*, in the **Moluccas**, **New Guinea**, **Bismarck Archipelago** etc.; other subspecies, in the **Solomons**. Van Nidek (1957) discusses and maps the boundary between *decemguttata sensu stricto* and subspecies *urvillei* in the Moluccas. The species does not reach Australia. It (represented by *urvillei*) is common and widely distributed in New Guinea, on the ground in open places. It is a rather large (*c.* 13-14 mm.) *Cicindela*, dark dull gray with, typically, 5 white marks on each elytron, but the marks vary somewhat (van Nidek 1953).

(Group *discreta*)

CICINDELA DISCRETA Schaum

Schaum 1863, J. Ent. **2**, p. 59.
Horn 1926, Coleop. Cat., Cicindelinae, p. 196 (see for synonymy and additional references).
van Nidek 1953, Psyche **60**, p. 156.
—— 1959, Nova Guinea (new series) **10**, p. 184.

Notes. C. discreta occurs in **Sumatra**, **Java**, **Borneo**, etc., the **Philippines**, **Celebes**, the **Moluccas**, **New Guinea**, **New Britain**, and North Queensland, **Australia**. It is a rather small species, found on the ground in open places.

(Group *semicincta-moseri*)

CICINDELA SEMICINCTA Brullé

Brullé 1834, *in* Silbermann, Rev. Ent. **2**, p. 100.
Horn 1926, Coleop. Cat., Cicindelinae, p. 197 (see for synonymy and additional references).
—— 1932, Rec. S. Australian Mus. **4**, p. 551.
van Nidek 1953, Psyche **60**, p. 158.

Notes. Horn gives the range of *semicincta* as from **New Guinea**, etc. (including the **Kei Is.**) and the **Bismarck Archipelago** to the **New Hebrides**, **Loyalty Is.**, **New Caledonia**,

and much of northern and eastern **Australia**. It is another rather small species which occurs on the ground in open places. The 2 other species of the group occur on Timor and the Tanimbar Is.

(Group *placida-funerata*)

(Subgroup A)

Cicindela excisilabris Horn

Horn 1905, Deutsche Ent. Zeits. **1905**, p. 160.

Notes. The type was from "**Neu Guinea**" without more exact locality.

Cicindela pupilligera Chaudoir

Chaudoir 1865, Cat. Coll. Cicindélètes, p. 59.
Horn 1904, Deutsche Ent. Zeits. **1904**, p. 428.

Notes. Chaudoir's specimen was "Envoyée par M. Wallace, comme trouvée à Nouvelle-Guinée," and presumably came from Dorey, **Neth. N. G.**

Cicindela io Horn

Horn 1900, Deutsche Ent. Zeits. **1900**, p. 203.
—— 1904, Deutsche Ent. Zeits. **1904**, p. 428.
——1915, *in* Wytsman, Genera Insectorum, Fasc. 82, p. 317, pl. 18, fig. 8.
van Nidek 1953, Psyche **60**, p. 158.

Notes. The types were from Milne Bay, **Papua**. I found the species at the same locality in December, 1943 (van Nidek det.).

Cicindela io micro-gemmea Horn

Horn 1932, Rec. S. Australian Mus. **4**, p. 551, fig. 2, a, b.
van Nidek 1953, Psyche **60**, p. 158.

Notes. Mt. Lamington, **Papua**, is the type locality of this form. I found it at Dobodura, Mar.-July, 1944 (van Nidek det.).

Cicindela delicata Bates

Bates 1874, Ent. Month. Mag. **10**, p. 265.
Horn 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1913, Arch. f. Naturg. **79**, Abt. A, Heft 11, p. 31 (as *innocens angustiformis*).
—— 1926, Coleop. Cat., Cicindelinae, p. 198.

Notes. Bates described *delicata* from "New Guinea (Wallace)," which presumably means Dorey, **Neth. N. G.** Horn's "*innocens angustiformis,*" from Roon Is. (Geelvink Bay), **Neth. N. G.**, is placed as a form of *delicata* in the *Coleopterorum Catalogus.* I do not know whether it is a recognizable subspecies.

Cicindela placida Schaum

Schaum 1863, J. Ent. **2**, p. 60.
Horn 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1915, *in* Wytsman, Genera Insectorum, Fasc. 82, pl. 21, fig. 252.
—— 1926, Coleop. Cat., Cicindelinae, p. 198.

Notes. Schaum's type(s) came from "Mysol (D. Wallace)" in the **Moluccas**, and Horn (1926) lists the species also from **New Guinea**.

Cicindela innocens Horn

Horn 1893, Deutsche Ent. Zeits. **1893**, p. 199.
—— 1913, Nova Guinea **9**, Zool. 3, p. 410.

Notes. The type was a ♀ from "Nova Guinea," but Horn (1913) later recorded a ♂ from "Heuvel-Biwak (Lorentz: XI 1909, 750 m.)," which is apparently in the region of the upper Lorentz R., **Neth. N. G.**

(Group *placida-funerata,* cont'd)
(Subgroup B)

Cicindela pupillata Schaum

Schaum 1863, J. Ent. **2**, p. 60.
Horn 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1926, Coleop. Cat., Cicindelinae, p. 198.

Notes. This species too (like *placida*) was described from "Mysol (D. Wallace)" in the **Moluccas** but is listed also from **New Guinea** by Horn (1926).

Cicindela aruana Dokhtouroff

Dokhtouroff 1887, Ann. Soc. Ent. Belgique **31**, p. 155.
Horn 1904, Deutsche Ent. Zeits. **1904**, p. 428.

Notes. So far as I know, this species has been recorded only from the **Aru Is.**, which belong with New Guinea, faunistically.

Cicindela loriae Horn

Horn 1897, Ann. Mus. Civ. Genova (Genoa) (2) **17**, p. 272.
—— 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1926, Coleop. Cat., Cicindelinae, p. 198 (*loriai*).

Notes. *C. loriae* is, I think, known only from the type locality, "Paumomu Riv. (Nouvelle Guinée britannique [= **Papua**])."

Cicindela innocentior Horn

Horn 1904, Deutsche Ent. Zeits. **1904**, p. 427.

Notes. Sattelberg, on the Huon Peninsula, **N-E. N. G.**, is the type locality.

Cicindela pseudo-pupillata Horn

Horn 1938, Ent. Beihefte Berlin-Dahlem **5**, p. 12, pl. 59, fig. 26.

Notes. Horn's single specimen was from 900 m. (*c.* 2,925 ft.) altitude in the Torricelli Mts., **N-E. N. G.**

Cicindela denudata Horn

Horn 1935, Nova Guinea **17**, p. 301.

Notes. Kokoda, **Papua**, 1,200 ft. altitude, is the type locality.

Cicindela cheesmanae van Nidek

van Nidek 1954, Ann. Mag. Nat. Hist. (12) **7**, p. 391, fig. 1 and pl. 9 (*cheesmannae*).

Notes. The types are from Camp Nok, Waigeu Is., **Neth. N. G.**, 2,500 ft. altitude.

Cicindela klynstrai van Nidek

van Nidek 1954, Ann. Mag. Nat. Hist. (12) **7**, p. 393, fig. 2 and pl. 9.

Notes. The types are from Japen ("Japan") Is., 500 ft. altitude, **Neth. N. G.**

(Group *placida-funerata*, cont'd)

(Subgroup C)

Cicindela bennigsenia Horn

Horn 1901, Deutsche Ent. Zeits. **1901**, p. 357.
—— 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1932, Rec. S. Australian Mus. **4**, p. 551, fig. 1, a, b.
van Nidek 1953, Psyche **60**, p. 158.

Notes. Known localities for *bennigsenia* are Hercules R. (?Hercules Bay, eastern **N-E. N. G.**) (type locality) and Mt. Lamington and Dobodura, **Papua**.

Cicindela funerata Boisduval

Boisduval 1835, Voyage Astrolabe, Faune Ent. **2**, p. 4, pl. 6, fig. 1.
Horn 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1926, Coleop. Cat., Cicindelinae, p. 199 (see for synonymy and additional references).
—— 1932, Rec. S. Australian Mus. **4**, p. 551.
van Nidek 1953, Psyche **60**, p. 159 (*funerata barbata*).
—— 1959, Nova Guinea (new series) **10**, pp. 184 (*funerata*), 185 (*barbata*).

Notes. According to Horn (1926), this species occurs on **New Guinea** and adjacent islands and west to Batjan and Buru in the **Moluccas**, and subspecies *barbata* Horn occurs on the **Bismarck Archipelago** and perhaps the **Solomons**; but van Nidek assigns specimens from eastern New Guinea to *barbata*. I do not know whether *barbata* is really a recognizable, geographic subspecies. I found the species common at Dobodura and took it also at Milne Bay, **Papua**, and near Nadzab, **N-E. N. G.**, and there is a long series in the M.C.Z. from Surprise Creek on the Morobe Plateau (also **N-E. N. G.**) (Stevens).

Van Nidek (1959) now considers that *funerata* and *barbata* are distinct species. He may be right, but I cannot now unscramble the old citations and records, so I shall let the two forms stand as one species for the time being.

(Group *placida-funerata*, cont'd)
(Subgroup doubtful)

Cicindela toxopeusi van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 185.

Notes. According to van Nidek, this should be a rather isolated species of the *placida-funerata* group, characterized by a pattern of elytral spots different from all other species of the group. It is described from 22 specimens from Bernhard Camp, the mountain slope above it, Araucaria Camp, and Rattan Camp, **Neth. N. G.** Altitudes are from 50 to 1200 m. (*c.* 150 to 3,900 ft.).

CICINDELA OLTHOFI van Nidek

van Nidek 1959, Nova Guinea (new series) **10**, p. 186.

Notes. Related to the preceding species, and described from 5 specimens from Bernhard Camp and the mountain slope above it, **Neth. N. G.**, 50-750 m. (*c.* 150-2,400 ft.).

(Group *variolosa*)

CICINDELA VARIOLOSA Blanchard

Blanchard 1853, Voyage au Pole Sud—L'Astrolabe et La Zélée, Zool. **4**, p. 6, Atlas Ins. pl. 1, fig. 4.
Horn 1926, Coleop. Cat., Cicindelinae, p. 199.

Notes. This species was described as from the south coast of **New Guinea**. Horn questions its occurrence in New Guinea (I do not know why) and records it from Batjan in the **Moluccas**.

(Group *boisduvali*)

CICINDELA BOISDUVALI Horn

Horn 1896, Deutsche Ent. Zeits. **1896**, p. 152.
—— 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1913, Nova Guinea **9**, Zool. 3, p. 410.
van Nidek 1959, Nova Guinea (new series) **10**, p. 186.

Notes. The types were from Humboldt Bay; Horn later (1913) recorded specimens from Alkmaar, on the upper Lorentz R., and van Nidek, from Hollandia and Bernhard Camp at low altitudes; all these localities are in **Neth. N. G.**

CICINDELA KAMPENI Horn

Horn 1913, Tijd. v. Ent. **56**, p. 310.

Notes. Described from 1 ♂ from Hollandia, **Neth. N. G.**

(Group *guineensis*)

CICINDELA GUINEENSIS Horn

Horn 1892, Deutsche Ent. Zeits. **1892**, p. 77.
—— 1904, Deutsche Ent. Zeits. **1904**, p. 428.
—— 1932, Rec. S. Australian Mus. **4**, p. 252, fig. 4.
van Nidek 1959, Nova Guinea (new series) **10**, p. 186.

Notes. Horn's type came from "**Neu-Guinea.**" I do not think typical *guineensis* was recorded from a more exact locality until van Nidek reported 3 from Bernhard Camp, **Neth. N. G.**

Cicindela guineensis umbrosa Horn

Horn 1932, Rec. S. Australian Mus. **4**, p. 553, fig. 3, a, b.
van Nidek 1953, Psyche **60**, p. 159.

Notes. The types of *umbrosa* were from Mt. Lamington, **Papua**, and I found it at Dobodura (van Nidek det.).

(Group *ancorifera-parryi-tuberculata*)

Cicindela ancorifera Horn

Horn 1897, Ann. Mus. Civ. Genova (Genoa) (2) **17**, p. 271.
—— 1926, Coleop. Cat., Cicindelinae, p. 199.
van Nidek 1953, Psyche **60**, p. 159.
—— 1959, Nova Guinea (new series) **10**, p. 186.

Notes. The type locality is Hatam, in the Arfak Mts. of Western **Neth. N. G.** Van Nidek (1953) records specimens from the Bismarck Range at 5,000-7,500 ft. altitude (taken by me) and Mt. Misim at 6,400 ft. in the Morobe District (Stevens), and Prof. E. O. Wilson took specimens at Tumnang, 1,400-1,600 m. (*c.* 4,300-4,900 ft.), and between Nganduo and Yunzain, 1,000-1,500 m. (*c.* 3100-4,625 ft.) on the Mongi watershed in the mountains of the Huon Peninsula; all these localities are in **N-E. N. G.** Van Nidek later (1959) notes specimens from Rattan, Sigi, Lower Mist, and Mist Camps in the Snow Mts., **Neth. N. G.**, at altitudes of 1200-1800 m. (*c.* 3,900-5,825 ft.). The species is apparently widely distributed in New Guinea at middle altitudes. The great interest of *ancorifera* is in its apparent geographical relationships: all the other species of its group are confined to New Zealand! Further study is needed to show whether this is a real relationship or a result of convergence. *C. ancorifera* lives on the ground in open places.

(Group *maino*)

Cicindela maino Macleay

Macleay 1876, Proc. Linn. Soc. New South Wales **1**, p. 165.
Horn 1915, *in* Wytsman, Genera Insectorum, Fasc. 82, p. 320, pl. 19, fig. 1.

Notes. Macleay's specimens were collected on the sea beach at the mouth of the Katow (Binaturi) R., and Horn lists the species also from Redscar Bay. Both localities are on the south coast of **Papua**. It is a striking, fusiform, very long-legged species with complex markings. Horn (*op. cit.*, p. 312) says it is derived from an Oriental stock.

(Group *denticollis*)

CICINDELA DENTICOLLIS Horn

Horn 1895, Deutsche Ent. Zeits. **1895**, p. 88.
—— 1915, *in* Wytsman, Genera Insectorum, Fasc. 82, p. 321.

Notes. Although the types were from "Nov.-Guinea" without further locality, Horn later gives the species' range as northwestern (**Neth.**) **N. G.** and the **Aru Is.** This species too is derived from a (different) Oriental stock (Horn, *op. cit.*, p. 321).

Subfamily CARABINAE

Although this is an artificial or composite subfamily, it is recognized in the *Coleopterorum Catalogus*, and it is temporarily useful as a device for arranging the elements of a complex family of which the phylogeny is not yet understood.

Tribe OZAENINI

Ozaenini Auct., including Bänninger 1927, Deutsche Ent. Zeits. **1927**, p. 177.
Ozaenidae Auct., including Jeannel 1946, Coléop. Carabiques de la Région Malgache, Part 1, p. 46.

Notes. This apparently primitive tribe is almost pantropical in distribution. A single genus and species of it reach New Guinea, from the Orient.

Genus PSEUDOZAENA Castelnau

Castelnau 1834, Étude Ent. **1**, p. 55.
Bänninger 1927, Deutsche Ent. Zeits. **1927**, p. 192.
Jeannel 1946, Coléop. Carabiques de la Région Malgache, Part 1, p. 48.

Diagnosis. None required here. This is the only ozaenine genus in New Guinea.

Description. See references given above.

Genotype. P. megacephala Castelnau = *Ozaena orientalis* Klug.

Generic distribution. As limited by Bänninger, the genus is confined to the Malay Peninsula, Formosa, and the Indo-Australian Archipelago east to the Philippines, New Guinea, the Admiralties, the Solomons, and (introduced?) the Palau Is. In the broader sense of Jeannel, it occurs also in eastern tropical Asia, Africa, and Madagascar.

Pseudozaena orientalis opaca (Chaudoir)

Picrus opacus Chaudoir 1868, Ann. Soc. Ent. Belgique **11**, p. 46.
Pseudozaena opaca Andrewes 1924, Ann. Mag. Nat. Hist. (9) **14**, p. 585.
Pseudozaena tenebrosa Sloane 1890, Rec. Australian Mus. **1**, p. 102.
Pseudozaena tricostata tenebrosa Bänninger 1927, Deutsche Ent. Zeits. **1927**, p. 192.
Pseudozaena tricostata opaca Gressitt 1953, Bull. Bishop Mus. No. 212, p. 95, fig. 45a.

Description. None required here, except to note that the species is winged. See figure 1.

Types. Of *opacus* Chaudoir, apparently from Ceram and Ternate in the **Moluccas** (Andrewes 1924), now presumably in the Oberthür Collection at the Paris Mus.; of *tenebrosa* Sloane, from British New Guinea (**Papua**), now probably in the Sloane collection at Canberra, Australia.

Occurrence in New Guinea. **Papua**: Dobodura, Mar.-July 1944 (Darlington)[1]; Kokoda, 1,200 ft., (Cheesman)[1]; Port Moresby area (L. Jones, British Mus.); Brown R., May 22, 1956 (E. J. Ford, Jr., Bishop Mus.); Daru, mouth of Fly R., July 1941 (R. G. Wind, California Acad.); Kiunga, Fly R., July 23-25, 1958 (W. W. Brandt, Bishop Mus.); Kikori, Feb. 27, 1920 (J. T. Zimmer, Chicago Mus.). **N-E. N. G.**: Aitape, Aug. 1944 (Darlington); Stephansort, Astrolabe Bay (Biró, Hungarian National Mus.); Torricelli Mts., Mokai Village, 750 m. (*c.* 2450 ft.), Dec. 8-15, 1958 (W. W. Brandt, Bishop Mus.). **Neth. N. G.**: Humboldt Bay region, including Hollandia and Cyclops and Bewani Mts. up to 1,200 ft. (various sources); mountain slope above Bernhard Camp, 100 m. (about 325 ft.), April 1939 (Toxopeus); Araucaria Camp, Snow Mts., 800 m. (about 2,600 ft.), Mar. 1929 (Toxopeus); Upper Setekwa R., Snow Mts. (*t.* Bänninger); route of the Kaiserin-Augustafluss Expedition (*t.* Bänninger); Geelvink Bay, 1878 (Raffray & Maindron, Paris Mus.); Arfak Mts. (*t.* Bänninger); Wasian, Sept. 1939 (R. G. Wind, M.C.Z.). Several additional specimens seen without exact localities or from localities I have not been able to find. The records suggest that this insect occurs throughout New Guinea from sea level into the foothills of the mountains. As to its habits, I have taken it in flood debris and have seen specimens collected "at

[1] For disposition of material and for abbreviations used see present part of this work, p. 324, and part 2 (1952), pp. 90-91.

light'' and (from the Philippines) ''in sawdust at mill.'' Gressitt (*loc. cit.*) says that, in the Palau Is., it is ''a moderately common predaceous beetle in logs and trunks where *Oryctes* is found. . . . One adult kept in the laboratory fed for five weeks on *Oryctes* eggs alone, and another lived for three weeks on eggs and young larvae only.''

Notes. After examination of new material, including 39 specimens from New Guinea originally assembled for study at the M.C.Z. (more seen later), and after comparison of the ♂ copulatory organs, I am prepared to go even further than Bänninger (1927) in reducing the number of forms in this genus, and to recognize in *Pseudozaena sensu stricto* only one species with three geographical subspecies: typical *orientalis* (Klug) of the Malay Peninsula, Sumatra, Java, and Borneo; subspecies *opaca* (Chaudoir) of **Formosa**, the **Philippines**, the **Moluccas**, **New Guinea**, and the **Palau Is.** (if native there); and subspecies *tricostata* Montrousier of New Britain and the Solomons. A specimen from the Kei Is. (H. C. Siebers, British Mus.) has stood in the Andrewes Collection under *orientalis*, but is actually *opaca*. It is probably the basis of Andrewes' Kei Is. record of *orientalis;* the Kei Is. should be deleted from the range of this form. Specimens from both New Guinea and the Philippines vary so much in sculpture of elytra that I cannot distinguish the New Guinean population as a separate subspecies. A specimen from Waigeu Is., west of New Guinea (Cheesman), and 3 from the Admiralty Is. (U.S.N.M., Bishop Mus.) are like *tricostata*, but should not be referred to that subspecies without examination of additional material. These specimens from coastal islands *may* be relicts of a tricostate population that *may* formerly have occurred on New Guinea but that (if it occurred) has changed or been replaced.

Tribe PAUSSINI

Paussidae Auct. (in part).

Paussini Darlington 1950, Trans. Amer. Ent. Soc. (Philadelphia), **76**, p. 90.

Although often treated as a separate family, the paussids are derived from the Ozaenini and are best placed after them in the Carabidae (Darlington *op. cit.*).

Only two species of paussids have been recorded from New Guinea, one representing an Australian genus the other an Oriental one, but the occurrence of the latter in New Guinea is doubtful.

Key to Genera of Paussini Recorded from New Guinea

1. Antennae with 10 free segments, the 9 flagellar ones expanded and flattened ..... *Arthropterus*
— Antennae appearing 2-segmented, the flagellum fused, with 2 conspicuous processes posteriorly ..... *Euplatyrhopalus*

Genus ARTHROPTERUS Macleay

Macleay 1838, *in* A. Smith, Illustrations Zool. S. Africa, Invertebratae, p. 75.

Gestro 1910, Junk-Schenkling Coleop. Cat., Paussidae, p. 7 (see for additional references etc.).

Darlington 1950, *op. cit.*, pp. 94, 95, 106.

Diagnosis. See Darlington, *op. cit.*

Description. None needed here.

Genotype. Cerapterus macleayii Donovan, of Australia.

Generic distribution. Living only in Australia (many species) and New Guinea (1 species); supposedly fossil in the Baltic amber in Europe (several species).

ARTHROPTERUS NOVELLUS Kolbe

Kolbe 1924, Ent. Mitteilungen **13**, p. 72.

Description. None needed here.

Types. Two specimens labeled only "New Guinea" (Staudinger), in Stettin and Berlin Museums.

Occurrence in New Guinea. Known only from the types.

Notes. The state of the wings in this species is unknown. In Australia, the wings are fully developed in some *Arthropterus*, vestigial in others.

Genus EUPLATYRHOPALUS Desneux

Desneux 1905, *in* Wytsman's Genera Insectorum, 35me fasc., Paussidae, p. 18.

Darlington 1950, Trans. American Ent. Soc. (Philadelphia) **76**, pp. 98, 107.

Diagnosis. See Darlington, *op. cit.*

Description. None needed here.

Genotype. Platyrhopalus aplustrifer Westwood, of India.

Generic distribution. India and Burma to Sumatra and Java; and perhaps New Guinea. (No paussid of any sort is yet known from Celebes or the Moluccas.)

Euplatyrhopalus wasmanni van Emden

van Emden 1927, Ent. Blatter **23**, p. 127.

Description. None required here. The species is probably fully winged.

Type. From **New Guinea**? According to van Emden, it may really be from Borneo; type should be in Dresden Mus.

Occurrence in New Guinea. Known only from the type — if it came from New Guinea.

Tribe SCARITINI

Scaritini Auct., including Andrewes 1929, Fauna British India etc., Coleop., Carabidae **1**, p. 208.

Scaritidae Auct., including Jeannel 1946, Coléop. Carabiques de la Région Malgache, Part 1, p. 212.

New Guinea has relatively few genera of this tribe, only 3, against more than 15 in the Orient and about 20 in Australia. The dominant, nearly cosmopolitan genus, *Scarites*, which includes many Oriental species, extends east to Celebes and Timor but does not reach New Guinea or Australia. And the dominant Australian "carenums," with about a dozen genera and hundreds of species in Australia, are still unknown in New Guinea, although one or two species of them may yet turn up in southern New Guinea, in the extensive, open Eucalyptus country there.

Key to Genera of Scaritini Known from New Guinea

1. First segment of antenna received in deep groove under eye; antenna with first 4 segments glabrous (except for fixed tactile setae); 1 supraocular seta over each eye (subtribe Scaritina) ..... *Geoscaptus*
— First segment of antenna not received in deep groove; antenna with first 2 segments glabrous; 2 supraocular setae ever each eye (subtribe Clivinina) 2
2. Elytra strongly dentate at humeri; antennal segment 2 attached very eccentricly to segment 1; length (in New Guinea) *c.* 3½ mm. ... *Syleter*
— Elytra not dentate at humeri; first 2 segments of antenna normal; length (in New Guinea) *c.* 4–18 mm. ... *Clivina*

Genus Geoscaptus Chaudoir

Chaudoir 1855, Bull. Soc. Nat. Moscou **28**, Part 1, No. 1, p. 5.
Sloane 1905, Proc. Linn. Soc. New South Wales **30** pp. 103–108.

Bänninger 1937, Deutsche Ent. Zeits. **1937**, pp. 118, 133–137. (Selected references only)

Diagnosis. Subcylindrical, shining black, *Scarites*-like carabids, with the maxillae broadly rounded apically, not curved in and not pointed or toothed as in *Scarites* etc.

Description. None required here.

Genotype. Geoscaptus laevissimus Chaudoir of Australia.

Generic distribution. Eastern and northern Australia, New Guinea.

Geoscaptus cacus (Macleay)

Scarites cacus Macleay 1863, Trans. Ent. Soc. New South Wales **1**, p. 67.
Geoscaptus cacus Bänninger 1937, Deutsche Ent. Zeits. **1937**, pp. 135, 136. (Selected synonymy and references only.)

Description. See generic description and figure 2. Within the genus, this species is notably convex (subcylindrical) and relatively small, 16-24 mm. (Bänninger). Specimens from New Guinea are near the minimum size for the species, *c.* 16-20 mm.

Type. From "Port Denison" (near Bowen, Queensland, Australia); should be in Macleay Mus., Sydney.

Occurrence in New Guinea. **Papua**: 1, Port Moresby area, May 1947 (L. Jones, British Mus.); 2, Dobodura, Mar.-July 1944 (Darlington). **N-E. N. G.**: 1, vic. Nabzab, July 1944 (Darlington). **Neth. N. G.**: 1, Hollandia, Apr. 1945 (Malkin, U.S.N.M.). The habitat in New Guinea is not recorded, but in Australia the genus occurs (by day) under cover near water.

Notes. Widely distributed also in northern and eastern **Australia**. The species (like others of the genus) is winged and probably a good flier.

Genus Syleter Andrewes

Andrewes 1941, Ann. Mag. Nat. Hist. (11) **7**, p. 317.
Psilus Putzeys 1877, Ann. Soc. Ent. Belgique **20**, Compt. Rend., p. 46.
Andrewes 1929, Fauna British India etc., Coleop., Carabidae **1**, pp. 344, 386–389.

Diagnosis. See preceding references and key to genera.

Description. See Andrewes 1929, pp. 386-387.

Genotype. Ardistomis paradoxa Putzeys of Siam, etc.

Generic distribution. Burma and Indochina to the Philippines, New Guinea, and the tip of Cape York, Australia; Africa.

SYLETER PAPUA n. sp.

Description. Form (fig. 3) of *Ardistomis* (rather like stout *Dyschirius*); reddish piceous, elytra darker, appendages dark reddish; surface moderately shining, reticulate microsculpture approximately isodiametric on front of head, pronotum, and striae of elytra, absent on elytral intervals, which polished and shining. *Head* .59 and .59 width prothorax; eyes prominent (normal), genae short and oblique; antennae normal for genus, outer segments slightly longer than wide; labrum 7-setose (single setae sometimes missing); clypeus truncate with angles rounded, clypeal suture obliterated; frontal sulci deep, subparallel, but irregular and slightly curved outward in front and behind; a strong ridge along outer edge of each sulcus above eye, separated from eye by a channel; front otherwise almost evenly convex except often with a faint longitudinal impression at middle, impunctate; neck impressed only at sides, with a row of punctures on each side but widely interrupted at middle. *Prothorax* broad, rounded; width/length (including peduncle) 1.05 and 1.07; sides broadly rounded anteriorly, more strongly posteriorly; anterior angles blunt, only slightly prominent, posterior ones broadly rounded but marked by faint teeth; apex broadly emarginate, truncate at middle; lateral margins entire, each with usual 2 setae, at basal angle and about ⅓ from apex; disc convex, with deep transverse impression anteriorly and shallower longitudinal median line, and with a small cluster of vague punctures on each side a little behind middle, but otherwise impunctate. *Elytra* 1.18 and 1.19 width prothorax; base emarginate between ends of 4th striae, with tubercles at anterior ends of 2nd and 3rd intervals; base strongly margined on each side from 4th striae to humeri; latter strongly toothed, and margins behind them crenulate; sides slightly diverging behind humeri, then broadly rounded to apices; disc strongly convex; striae deep and entire, reticulate rather than punctate; intervals moderately convex, impunctate, except 3rd interval 3-punctate, with anterior puncture near 3rd striae and other two near 2nd one. *Inner wings* fully developed. *Lower surface* microreticulate and in part roughened but not distinctly punctate. *Legs:* front tibia with a long, curved apical process and 2 strong teeth externally; middle tibia without spur. *Measurements:* length (in normal position) *c.* 3.3-3.8; width *c.* 1.1-1.3 mm.

Types. Holotype ♂ (M.C.Z. No. 30,152) and 22 paratypes

from Dobodura, **Papua**, Mar.-July 1944 (Darlington). Additional paratypes as follows: **Papua**: 13, Oro Bay, Dec. 1943-Jan. 1944 (Darlington). **Neth. N. G.**: 10, Hollandia, July-Sept. 1944 (Darlington); 52, Maffin Bay, Aug. 1944 (Darlington) and 12, same locality, Aug. 1944 (E. S. Ross, California Acad.). My specimens were all taken in very wet places in and around shaded swamps.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species occurs also in northern Cape York, **Australia**. It is similar to and probably a representative of *Syleter paradoxus* (Putzeys) of southeastern Asia, Sumatra, and Borneo, but as compared with *paradoxus* in the Andrewes Collection the present new species is a little broader, with relatively broader prothorax, and with the line of punctures across the neck more widely interrupted at middle.

Genus Clivina Latreille

Latreille 1802, Hist. Nat. Crustacés et Insectes **3**, p. 96.

Sloane 1896, Proc. Linn. Soc. New South Wales **21**, pp. 143–257, 275–280 (the Australian species).

—— 1904, Proc. Linn. Soc. New South Wales **29**, pp. 710–733 (Australian species).

Andrewes 1929, Fauna British India etc., Coleop., Carabidae **1**, pp. 344, 351–381.

Kult 1947, Acta Soc. Ent. Czechoslovakia **44**, p. 32 (subgenera).

—— 1951, Acta Soc. Ent. Czechoslovakia **48**, pp. 16–32 (the Oriental species).

(Selected references only)

Diagnosis and *description.* See preceding references and key to genera.

Genotype. Tenebrio fossor Linnaeus, of Europe.

Generic distribution. Almost cosmopolitan; many species on all continents, but few or none in cold places where (in the north) the genus tends to be replaced by *Dyschirius.*

Notes. Both Oriental and Australian groups of this genus are represented in New Guinea, but the exact relationships of some of the species are doubtful.

I have made a special comparison of the *Clivina* of Cape York (where I collected long series in 1958) with those of New Guinea. A few species (*zebi, basalis, sellata, ferruginea, inopaca*) in the two places seem to be the same, but most are different. Some of the species of this genus, especially those in

the last few couplets of the following key, are difficult to separate from each other and may now be in process of evolutionary radiation.

Most *Clivina* live in the ground in wet places, but each prefers a special niche within this general habitat (damp soil in rain forest, or mud by standing water, or sandy river banks, etc.). In Australia some species of the genus have entered deserts, and in the Philippines one occurs in decaying logs. Most species are winged and many fly to light, but the wings of a few have atrophied. Wing atrophy has in fact occurred in three separate stocks of the genus in New Guinea (see *toxopei, deälata,* and *crugatella*).

Species of Clivina previously described from New Guinea but not recognized from description

Clivina guineensis Kult

Kult 1951, Acta Soc. Ent. Czechoslovakia **48**, pp. 29, 30.

Type. From Astrolabe Bay, **N-E. N. G.** (from Staudinger, in Kult Coll.).

Notes. A rather small red species which may (or may not) be similar to *rufulus* (below); the brief description suggests significant differences.

Clivina schaubergeri Kult

Kult 1951, Acta Soc. Ent. Czechoslovakia **48**, pp. 29, 30.

Type. From "Fly River," **New Guinea** (Kult Coll.).

Notes. A black, shining, 8.5 mm. member of the *ephippiata* group characterized otherwise only by "head without neck constriction; intervals moderately convex, striae finely punctate, third stria with 4 little distinct pores" and especially by "antennal joints 1.5X longer than wide." I do not think this species is represented in the material before me.

These 2 species are not included in the following key.

Key to Known Species of Clivina of New Guinea

1. Anal (last ventral) segment with the 2 seta-bearing punctures on each side close together (fig. 18) 2
— Anal segment with the 2 seta-bearing punctures on each side widely separated (fig. 19) 3
2. Middle tibia with very short spur (fig. 20) (*tranquebarica* group) (p. 362) ..... *zebi*

— Middle tibia with longer spur; (anterior puncture of 3rd elytral interval displaced, near 2nd stria) (p. 362) ..... (*castanea*)

3. Very large (*c.* 14–18 mm.); (whole front coarsely, irregularly wrinkled) (p. 363) ..... *toxopei*

— Smaller (4–10 mm.) 4

4. Cylindrical, prothorax very elongate (L/W 1.23); legs and antennae very short and stout, intermediate antennal segments transverse (p. 364) ..... *brevicornis*

— Form only normally convex, or depressed 5

5. Labrum 6-setose (median seta lacking) 6

— Labrum 5- or 7-setose (median seta present) 7

6. Third elytral interval 4-punctate; (rather depressed; piceous or reddish; *c.* 5-6 mm.) (p. 365) ..... (*wallacei*)

— Third elytral interval 3-punctate; (black, appendages ferruginous; 5.3 mm.) (*komárcki* Kult, if labrum 6-setose; see also couple 9) ..... *komáreki*

7. Labrum 5-setose 8

— Labrum 7-setose 10

8. Large (*c.* 8.5-10 mm.); 3rd elytral interval 4-punctate (p. 366) ..... *kulti*

— Smaller (*c.* 6 mm.); 3rd elytral interval 3-punctate 9

9. Frontal (preocular) plates with outer margins normal, oblique anteriorly (fig. 10); neck constriction shallow or interrupted at middle; anterior transverse groove of pronotum normal (p. 368) ..... *biroi*

— Frontal plates broader, rounded (fig. 11); neck constriction entire, deeper, more sharply defined; anterior transverse impression of pronotum very deep (p. 369) ..... *komáreki*

10. Clypeus with wings separated from median part by at least slight notches (figs. 13, 14); elytron usually with 4 striae free at base, except in *deälata* 11

— Clypeus with wings not separated from median part by notches (figs. 15–17) (but wings in some cases advanced and forming obtuse angles with median part); (elytron usually with 3 striae free at base, but 4th stria sometimes free in *rufula, tripuncta, erugata, subfusa,* etc.) 14

11. Spur of middle tibia (fig. 24) very long, longer than tibial width; (anterior trochanter with a small acute tooth at apex, on lower edge of leg; front with rather coarse, scattered punctures at least anteriorly) 12

— Spur of middle tibia not longer than tibial width 13

12. Fully winged; elytron usually with 4 striae free at base; larger (5.8–6.5 mm.); usually black (p. 370) ..... *puncticeps*

— Inner wings full or vestigial; elytron with 3 or 4 striae free at base; smaller (4.5–5.4 mm.); brown or partly brown ..... *deälata*
(a) Fully winged (Fly River) (p. 373) ..... (subsp. *antecessor*)
(b) Wings vestigial, vestiges about ½ length of elytra; (Papua) (p. 372) ..... (*deälata sensu stricto*)

(c) Wings vestigial, vestiges shorter, scarcely reaching beyond posterior edge of metathorax; (Neth. N. G., N-E. N. G.) (p. 373) (subsp. *brachyptera*)

13. Eyes large, genae very short (fig. 14); anterior transverse groove of pronotum normally impressed (p. 374) *vigil*
— Eyes smaller; genae (measured obliquely from sides of neck to posterior edges of eyes) nearly as long as eyes; anterior pronotal groove obsolete (its place taken by an irregular line of dark pigment under the surface of the pronotum) (p. 375) *deleta*
14. Third intervals of elytra 3-punctate 15
— Third intervals 4-punctate (*australasiae-ephippiata* group) 16
15. Rather depressed; rufous; front not impressed and not punctate (p. 377) *rufula*
— Less depressed; usually blackish with elytral margin ± pale; front vaguely impressed, usually punctate (p. 378) *tripuncta*
16. Supraocular convexities (frontal carinae) smoothly continuous with swollen preocular plates (but if form is parallel-sided and ratio width elytra/prothorax less than 1.10 and abdomen *conspicuously* punctate, see *gressitti*, couplet 19) 17
— Supraocular convexities ± interrupted (impressed or abruptly narrowed) near anterior supraocular setae 18
17. Smaller (*c.* 5–6 mm.), broader, slightly flatter (p. 380) *erugatella*
— Larger (*c.* 6–8 mm.), narrower, slightly more convex (p. 382) *erugata*
18. Spur of middle tibia (figs. 32, 36) short, very near apex of tibia 19
— Spur of middle tibia always longer and usually not so near tibial apex 20
19. Subfusiform; ratio width elytra/prothorax *c.* 1.25; length over 6.5 mm. (p. 384) *subfusa*
— Very parallel sided; width elytra/prothorax less than 1.10; length under 6 mm. (p. 385) *gressitti*
20. Bicolored, black with anterior part of elytra red (p. 383) *basalis*
— Not thus bicolored 21
21. Very small (4 mm.); (brown) (p. 387) *sellata*
— Larger 22
22. Anterior trochanter with a small acute tooth at apex, on lower side of leg, *and* color brown, *and* length under 6 mm. (p. 387) *ferruginea*
— Anterior trochanter usually not toothed, or if toothed, other characters not as above 23
23. Front femur (fig. 38) less stout; spur of middle tibia (fig. 33) near tibial apex (p. 388) *fessa*
— Front femur stouter (fig. 39); spur of middle tibia (figs. 34, 35) not so near apex 24
24. Last ventral segment punctate (p. 389) *sansapor*
— Last ventral segment with reticulate microsculpture but usually not punctate 25
25. Elytral disc not dull 26
— Elytral disc dull (with reticulate microsculpture) 28

26. More slender, prothorax considerably longer than wide (L/W 1.09) (p. 390) . . . . . *csikii*
— Less slender, prothorax about as long as wide (between L/W 1.04 & W/L 1.03) 27
27. Middle of front conspicuously (but variably) punctate (p. 393) *brandti*
— Front not or only slightly punctate (p. 392) . . . . . *inopaca*
28. Black; elytral striae more distinctly punctate; intervals more convex, 3rd with the 4 dorsal punctures less distinct (p. 395) . . . . . *székessyi*
— More brownish, antennae and legs more reddish; elytral striae less distinctly punctate; intervals less convex, 3rd with the 4 discal punctures more distinct (p. 396) . . . . . *netolitzkyi*

Clivina zebi Kult

Kult 1951, Acta Soc. Ent. Czechoslovakia **48**, pp. 22, 24.

Description (recognition characters only). This is the only member of the Oriental *Clivina tranquebarica* group known to reach New Guinea. It is distinguished from other New Guinean *Clivina* by characters given in the key.

Type. The type is from Borneo, in Dr. Kult's collection.

Occurrence in New Guinea. **Papua**: 13, Dobodura, Mar.-July 1944 (Darlington). **Neth. N. G.**: 10, Hollandia, July-Sept. 1944 (Darlington); 1, same locality, May 1945 (H. Hoogstraal, M.C.Z.); 2, Maffin Bay, Aug. 1944 (Darlington). The species occurs chiefly, I think, in shaded swamps.

Notes. Clivina zebi ranges from **Sumatra** to the **Philippines** and **New Guinea**; I have seen 4 specimens also from Cape Gloucester, **New Britain**; and in 1958 I found it common at several localities on the Cape York Peninsula, **Australia**. I do not think it has received a name in Australia.

(Clivina castanea Westwood)

Westwood 1837, Proc. Zool. Soc. London **1837**, p. 128.

Andrewes 1929, Fauna British India etc., Coleop., Carabidae **1**, pp. 355, 374, fig. 54.

Clivina parryi Putzeys 1863, Mem. Soc. R. Sci. Liege **18**, p. 60.

(Selected references and synonymy only)

Description. A rather large, black *Clivina,* characterized in the key (above).

Type. The type of *castanea*, from Manila in the Philippines, is now in British Mus. The types of *parryi* were supposed to be from New Guinea, but it is doubtful if they really came from there. They should be in Brussels Mus.

Occurrence in New Guinea. I know no recent records; the old ones are doubtful.

Notes. Although this Oriental species is commonly said to extend to New Guinea, the supposed New Guinean specimens are old and of unstated history. They may have been collected by Wallace; if so, their real locality is doubtful. *Clivina castanea* is usually a very common species where it occurs. Its absence from all recent collections seen from New Guinea suggests that it does not really occur there.

Clivina toxopei n. sp.

Description. Form as figured (fig. 4); very large (in genus); black, appendages dark; moderately shining, pronotum and elytra with fine reticulate microsculpture distinct in type but less distinct or partly absent in paratype. *Head* (fig. 8) .72 and .68 width prothorax (in type and paratype); eyes small but convex, enclosed behind by genae; antennae short, median segments slightly wider than long, normally pubescent; mandibles short and stout; labrum 7-setose; clypeus subtruncate at middle, wings continuous with median part but more advanced, separated from preocular lobes by notches; facial carinae short and poorly defined; frontal foveae very deep, irregular; whole front of head coarsely and irregularly wrinkled, not punctate but sometimes vaguely punctulate; neck constriction entire or nearly so, not punctate. *Prothorax* exactly as long as wide by standard measurement but appearing slightly longer (because anterior angles are more advanced than front of prothorax at middle), widest near basal angles, strongly narrowed anteriorly; apex broadly emarginate; anterior angles very narrowly rounded, almost right; posterior angles obtuse-rounded, not distinctly dentate; sides almost straight (slightly arcuate), finely margined, each with usual 2 setae; disc with median line and anterior transverse impression entire, impressed, not punctate; surface of disc variably wrinkled or strigulose, not punctate but inconspicuously punctulate, with an irregular longitudinal impressed line on each side distinct in type but vague in paratype. *Elytra* elongate-oval, slightly wider than prothorax (E/P 1.1 in both specimens); base slightly emarginate; humeri slightly prominent anteriorly but broadly rounded into sides, not dentate; each elytron with 3 striae free at base, the 4th turning out and joining or almost joining outer striae at humerus;

striae entire, deeply impressed, punctate in type, not in paratype; intervals convex, 3rd 4-punctate on outer side. *Inner wings* atrophied; elytra locked together or connate. *Lower surface:* prosternal process wide and flat before coxae; proepisterna shining, only partly and lightly microretieulate; lateral cavities of peduncle reticulate and more or less wrinkled; metepisterna shortened, about ½ longer than wide (judged by eye — I do not want to set standards of measurement); abdomen with fine reticulate microsculpture, impunctate; apical segment with 2 seta-bearing punctures on each side widely separated. *Legs* normal, not stouter than usual; front tibia 3-dentate, the 4th (upper) tooth reduced to an inconspicuous angulation; middle tibia (fig. 21) with spur on outer side near apex about as long as width of tibia. *Measurements* (type and paratype): length *c.* 18 and 14.5; width *c.* 4.8 and 4.1 mm.

Types. Holotype ♀ (Leiden Mus.) from Sigi Camp, Snow Mountains, **Neth. N. G.**, 1,500 m. (*c.* 4,650 ft.), Feb. 1939 (L. J. Toxopeus); and 1 ♀ paratype (M.C.Z. No. 30,153) from Araucaria Camp, also in the Snow Mountains, 800 m. (*c.* 2,480 ft.), March 1939 (Toxopeus).

Measured specimens. The types.

Occurrence in New Guinea. Known only from the types.

Notes. This very large *Clivina* has no known close relatives in New Guinea. It resembles and may be related to certain Australian species of Sloane's *procera* group, but differs from the Australian ones known to me in the strong wrinkling of the front of the head. The occurrence of this specialized (flightless) species in the Snow Mts. suggests that other species derived from the same (Australian) ancestral stock will eventually be found elsewhere in the mountains of New Guinea.

Clivina brevicornis n. sp.

Description. Cylindrical; brownish piceous, appendages paler; moderately shining, pronotum and elytra without (or with indistinct) reticulate microsculpture. *Head* (fig. 12) .80 width prothorax; eyes small but rather prominent; genae short, almost forming right angles with neck; antennae very short, median segments transverse, normally pubescent; mandibles normal, short, curved; labrum 7-setose; clypeus broadly emarginate, with wings continuous with median part, separated from preocular lobes by moderate notches; clypeal suture irregularly impressed; facial carinae short; front irregularly wrinkled and

with median fovea, slightly and irregularly punctate; neck wide, not impressed above. *Prothorax* much longer than wide (L/W 1.23), widest near base, but not much narrowed anteriorly; sides sinuate or broadly emarginate in outline before middle; anterior angles rounded, not produced; posterior angles broadly rounded, not dentate; lateral margins reaching basal margin; disc with median line and anterior transverse line entire, normally impressed; surface scarcely strigulose, almost impunctate except for an inconspicuous linear group of punctures on each side near base, but surface of disc abraded anteriorly or possibly with some reticulate microsculpture. *Elytra* cylindrical, scarcely wider than prothorax (E/P 1.05); base nearly truncate; humeri rather narrowly rounded, not dentate; sides subparallel, faintly, broadly sinuate about ⅓ from base; striae impressed, punctate, the first 4 free at base; intervals moderately convex, 8th carinate at base, 3rd inconspicuously 4-punctate, the punctures almost lost against the punctate 3rd stria. *Inner wings* fully developed. *Lower surface:* prosternal process narrow before anterior coxae; proepisterna reticulate but not distinctly punctate; abdomen reticulate basally especially at sides, shining apically, impunctate; last ventral with 2 setae on each side widely separated. *Legs* short; front tibia 3-dentate, the 4th (upper) tooth missing; middle tibia (fig. 22) with spur about ⅓ from apex and about as long as width of tibia. *Measurements:* length *c.* 4.3; width between 1.0 and 1.1 mm.

Type. Holotype (M.C.Z. Type No. 30,154), sex not determined, from Dobodura, **Papua**, New Guinea, Mar.-July 1944 (Darlington).

Occurrence in New Guinea. Known only from the type.

Measured specimen. The type.

Notes. This new species is similar to and probably related to *Clivina bullata* Andrewes, of which I have seen the type, from Timor, in the British Museum. However, the present new species is smaller, with sides of prothorax more sinuate before middle, and with front of head much less strongly sculptured than in *bullata,* though on the same pattern.

(Clivina wallacei Putzeys)

Clivina castanea Putzeys 1863, Mem. Soc. R. Sci. Liege **18**, p. 35 (part) (not *castanea* Westw.)

Clivina westwoodi Putzeys 1866, Ann. Soc. Ent. Belgique **10**, p. 109 (part) Andrewes 1926, Ann. Mag. Nat. Hist. (9) **17**, p. 373.

Clivina wallacei Putzeys 1866, Ann. Soc. Ent. Belgique **10**, p. 127.
Andrewes 1926, Ann. Mag. Nat. Hist. (9) **17**, pp. 373, 374.
—— 1929, Ann. Mag. Nat. Hist. (10) **4**, p. 355.
(Selected references only)

Description. Sufficiently characterized in preceding key to species of *Clivina*.

Types. The (supposedly) new Guinean cotype of *castanea* Putzeys (*westwoodi* Putzeys) is in the Putzeys Collection, Brussels Mus., where Andrewes examined it. Of *wallacei*, Andrewes (1929, p. 355) records seeing 2 specimens, "including the type," also in the Putzeys Collection, Brussels; he gives the type locality as **New Guinea**, but Putzeys says the specimens are from **Celebes**, which I think is probably correct (see below).

Occurrence in New Guinea. The only records are old and doubtful (see below).

Notes. Putzeys originally described his *castanea* as from Ceylon and New Guinea, and renamed it *westwoodi* when he found that *castanea* was preoccupied. Andrewes, finding that Putzeys' original specimens represented two species, applied the name *westwoodi* to the one from Ceylon. In the meantime Putzeys had described *wallacei* (without noting its resemblance to his *westwoodi*) from specimens from "Makassar (Celebes)" and "Dorey (Celebes)," and Andrewes, after examination of Putzeys' types, has applied the name to the present species. "Dorey (Celebes)" is a jumbled locality, for Dorey is really in New Guinea. However, the "Dorey" label is always to be doubted (see introduction, p. 331). I know of no recent material of this species from New Guinea, and I suspect that all the old New Guinea records are based on mislabeled specimens collected by Wallace probably on Celebes.

Clivina kulti n. sp.

Description. Form as figured (fig. 5); large; a little broader than usual in genus, but slightly narrowed anteriorly, slightly flatter above than usual; black, appendages brownish; shining, most of upper surface without reticulate microsculpture. *Head* (fig. 9) .69 and .70 width prothorax (in measured specimens); eyes prominent, genae short, almost forming right angles with sides of neck; antennae normal, median segments about as long as wide, normally pubescent; mandibles short, curved; labrum 5-setose (in all specimens); clypeus truncate at middle, clypeal

wings continuous with median part but strongly advanced, separated from preocular lobes by slight notches; elypeal suture not visible; supraocular convexities continuous with preocular lobes, separated from front by deep sulci which extend from neck constriction to base of elypeus, becoming deeper and sinuous anteriorly; front slightly, almost evenly convex, impunctate; neck constriction interrupted at middle, slightly punctate at sides. *Prothorax* slightly wider than long (W/L 1.10 and 1.13), widest not far before posterior angles, rather strongly narrowed anteriorly; sides nearly straight and converging in about anterior half; apex emarginate; anterior angles narrowly rounded, subrectangular; posterior angles obtuse-rounded, not dentate; disc rather flat, with lightly impressed middle line and anterior transverse impression; surface of disc slightly strigulose, virtually impunctate. *Elytra* 1.14 and 1.12 width prothorax; base broadly emarginate; humeri rounded, not dentate; each elytron with usually 4 striae free at base, rarely only 3 (base of 4th stria sometimes turned out, rarely joining base of 5th — holotype has only 3 striae free on left elytron, 4 on right); striae moderately impressed, entire, usually faintly punctulate; intervals slightly convex, 3rd 4-punctate (on both elytra of all individuals except right elytron of type only 3-punctate). *Inner wings* fully developed. *Lower surface:* prosternal process rather wide before coxae, weakly longitudinally impressed; proepisterna roughened but rather shining; abdomen microreticulate, almost impunctate except apical segment rugose-punctate at sides; 2 seta-bearing punctures on each side apical segment far apart. *Legs* rather slender (in genus); front tibia 3-dentate; middle tibia (fig. 25) with spur on outer side near apex not quite as long as width of tibia. *Measurements:* length *c.* 8.5-10.4; width *c.* 2.6-3.0 mm.

Types. Holotype ♂ (M.C.Z. No. 30,155) and 7 paratypes all from Aitape, **N-E. N. G.**, Aug. 1944 (Darlington), taken in flood debris in forest or recently forested areas.

Occurrence in New Guinea. Known only from the type locality.

Measured specimens. The ♂ holotype and 1 (sex not det.) paratype.

Notes. This well defined species is sufficiently characterized in the key (above).

Clivina biroi Kult

Kult 1951, Acta Soc. Ent. Czechoslovakia **48**, pp. 28, 30.

Description. Medium sized, moderately broad, subparallel, moderately convex; black, appendages irregularly dark brown, antennae paler; shining, upper surface almost entirely without reticulate microsculpture. *Head* (fig. 10) .71, .71, .71 width prothorax (in measured specimens); eyes prominent, genae short, almost forming right angles with sides of neck; antennae normal, median segments as wide as or slightly wider than long; mandibles short; labrum 5-setose (in all specimens); clypeus broadly emarginate, with wings continuous with median part and somewhat advanced, separated from preocular lobes by notches; preocular lobes with outer edges oblique, nearly straight and strongly converging in about anterior ⅔; clypeal suture indistinct; supraocular convexities nearly continuous with swollen preocular lobes, separated from front by subparallel, irregular sulci, which become wider and strongly sinuous anteriorly; front slightly, almost evenly convex or with a slight V-shaped impression anteriorly, with a group of punctures near middle anteriorly; neck constriction shallow, narrowly interrupted at middle, slightly punctate toward sides. *Prothorax* about as long as wide (L/W 1.02, 1.03, 1.03), nearly quadrate, slightly narrowed anteriorly; sides vaguely sinuate about anterior ⅓; apex almost truncate, faintly emarginate; anterior angles almost right, narrowly rounded, not advanced; posterior angles obtuse, not or vaguely dentate; lateral margins entire, each with usual 2 setae, near basal angle and about ⅙ of prothoracic length from apex; disc rather convex, with usual impressed middle line and anterior transverse impression, with surface slightly, irregularly strigulose, not distinctly punctate. *Elytra* slightly wider than prothorax (E/P 1.08, 1.04, 1.05), rather short (in genus); base almost truncate; humeri rounded, not dentate; each elytron with 3 or 4 striae free at base; striae rather deeply impressed, entire, finely punctate; intervals rather convex, 7th and 8th joined near base where narrow and convex but scarcely carinate, 3rd 3-punctate in all specimens. *Inner wings* fully developed. *Lower surface:* prosternal process average (neither very broad nor very narrow) before coxae; proepisterna with light reticulate microsculpture externally, shining and vaguely punctate internally; abdomen with reticulate microsculpture only at base, shining in last 3 or 4 segments, punctate especially near sides of last 4 segments, and with last segment wholly punctate in

some individuals; 2 seta-bearing punctures each side last ventral segment far apart. *Legs* rather stout; front tibia 3-dentate; middle tibia (fig. 23) with spur near apex nearly as long as width of tibia. *Measurements:* length 5.4–6.4; width 1.5–1.8 mm. (Kult gives length as 5.9–6.8 mm.).

Types. Holotype ♀ from Sattelberg, **N-E. N. G.** (Biró, Hungarian National Mus.) and 1 ♀ paratype from Madang, **N-E. N. G.** (Kult collection). I am indebted to Dr. Z. Kaszab for an opportunity to examine the type.

Occurrence in New Guinea. **Papua:** 19, Dobodura, Mar.-July 1944 (Darlington); 1, Milne Bay, Dec. 1943 (Darlington). **N-E. N. G.:** 13, Aitape, Aug. 1944 (Darlington); 1, Nadzab, July 1944 (Darlington); 3, Chimbu Valley, Bismarck Range, 5000-7500 ft., Oct. 1944 (Darlington); 1, Adelbert Mts.: Wanuma, 800–1000 m. (*c.* 2600–3250 ft.), Oct. 23, 1958 (J. L. Gressitt, Bishop Mus.) taken in light trap. **Neth. N. G.:** 1, Maffin Bay, Aug. 1944 (Darlington). The species usually occurs in shaded swamps.

Measured specimens. The ♀ type and a pair (♂ ♀) from Dobodura, listed in this order.

Notes. Sufficiently compared with other species in the key to species of *Clivina*.

The type of *biroi* has the whole last ventral segment closely punctate, while most individuals of the species have the last ventral nearly smooth at middle, but at least one specimen from Dobodura has it closely punctate, showing that the character varies individually. The type has only 3 striae free at base of each elytron, and this is the case also in the Nadzab, Maffin Bay, and most Aitape individuals, but one from Aitape has the 4th striae more or less free too, as it is in specimens from Chimbu Valley, Dobodura, and Milne Bay. This is an example of partly individual and partly geographical variation in a character sometimes considered very important in classification.

Clivina komáreki Kult

Kult 1951 Acta Soc. Ent. Czechoslovakia **48**, pp. 18, 31.

Description (significant characters only). A medium-sized black *Clivina*, characterized by unusually wide, strongly arcuate frontal plates (fig. 11) and unusually deep anterior transverse impression of pronotum, and by other characters given by Kult and in the key to species of *Clivina*.

Type. From "Gulf of Papua," **Papua**, in Dr. Kult's collection.

Occurrence in New Guinea. **Papua**: the type. **Neth. N. G.**: 1, Hollandia, Nov. 1944 (H. Hoogstraal, M.C.Z.).

Notes. My single specimen of this strongly defined species fits the description of *komárcki* reasonably well in most ways, except that the labrum, described as 6-setose in *komáreki* by Kult, is only 5-setose. My specimen is in good condition, and the 5 labral setae are clearly visible and symmetrically placed. This difference (if in fact there is a difference) is not necessarily important; the number of labral setae varies in some other species. The proportions of the Hollandia specimen are: head .77 width prothorax; prothoracic width/length 1.06; width elytra/-prothorax 1.12. *Measurements:* length *c.* 5.8, width *c.* 1.7 mm. These figures are close to those given by Kult for the type. Kult recognized no close relatives of this species. However, it is probably related to and possibly derived from *Clivina biroi* (above), which has the same general form and group characters without the more striking special characters of *komárcki*.

Clivina puncticeps n. sp.

Description. Form as figured (fig. 6); rather slender, subparallel, moderately convex; black or dark brown, margins of elytra sometimes paler, appendages dark brown or rufous; shining, upper surface (except at sides) almost without reticulate microsculpture. *Head* (fig. 13) .75 and .75 width prothorax (in measured specimens); eyes prominent but smaller than usual; genae oblique or rounded-oblique, as long as or not much shorter than eyes; antennae normal, intermediate segments about as wide or slightly wider than long; mandibles short; labrum usually 7-setose, individually 6-setose (e.g. an example from Aitape has an intermediate seta missing on the right side); elypeus truncate or slightly emarginate, separated from wings by moderate notches; elypeal wings prominent, narrowly rounded, separated from preocular lobes by deep notches; clypeal suture obsolete; supraocular convexities narrow, almost cariniform, separated from swollen preocular lobes; frontal sulci widely separated, slightly diverging anteriorly and posteriorly; clypeus with transverse swollen area or transversely wrinkled; front irregularly convex, slightly impressed at middle, irregularly in part rather coarsely punctate; neck constriction slightly impressed

and punctate at sides, usually (not always) interrupted at middle. *Prothorax* subquadrate, slightly longer than wide, length/width 1.06 and 1.09, only slightly narrowed anteriorly; sides usually subsinuate before middle, slightly arcuate in front of and behind the sinuation; lateral margins entire, each with usual 2 setae: anterior margin broadly emarginate; anterior angles rather narrowly rounded, scarcely advanced; posterior angles weakly dentate; pronotum with usual anterior transverse impression and longitudinal median line, with a few irregular transverse strigae, and finely, irregularly, inconspicuously punctulate. *Elytra* slightly wider than prothorax (measurement of width impossible because left elytron of all specimens raised to show inner wings), long, subparallel; base subtruncate-emarginate, with small tubercles at front ends of 2nd and usually 3rd intervals; humeri rather narrowly rounded; 3 or 4 inner striae of each elytron free at base (individual variation); striae entire or nearly so, well impressed, distinctly punctate; intervals moderately convex, 8th finely carinate at base, 3rd 4-punctate on outer edge, intervals otherwise scarcely visibly punctate. *Inner wings* fully developed in all specimens. *Lower surface:* proepisterna rugose; abdomen rugose or punctate at sides and across almost whole apical segment; 2 apical setae on each side widely separated. *Legs:* anterior tibia strongly 4-dentate (but upper tooth sometimes reduced); anterior trochanter (of all specimens) with a small *acute* tooth at apex, on lower edge of leg; middle tibia (fig. 24) with a long spur (longer than width of tibia) on outer side about one third from apex. *Measurements:* length 5.8–6.5; width *c.* 1.5 mm. (width not measured exactly because of raising of elytra).

Types. Holotype ♂ (M.C.Z. Type No. 30,156) and 13 paratypes from vicinity of Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington), and 1 additional paratype from same locality, Apr. 1945 (Malkin, U.S.N.M.). Additional paratypes: 2, Aitape, **N-E. N. G.**, Aug. 1944 (Darlington), and 1, Idenburg R., **Neth. N. G.**, 400 m. (about 1,300 ft.) July 15-Sept. 15, 1938 (J. Olthof, Leiden Mus.). My specimens were taken from damp soil but not in very wet places.

Other material. One additional specimen, not a type, from Hollandia (Darlington), with front of head abnormally flattened and wrinkled. Also 1 from Dobodura, **Papua**, Mar.-July 1944 (Darlington) that I refer here with doubt: the front is flatter than in typical *punticeps* and seems at first impunctate,

but vague shallow punctures can be seen on careful examination, and the insect is browner (less black) and perhaps slightly more depressed than typical *punticeps,* but otherwise nearly the same. I do not know whether it is an aberrant *punticeps* or a different, perhaps geographical form.

Measured specimens. The holotype and one paratype from Hollandia.

Notes. A very distinct species, placed in relation to others in the key to species of *Clivina.*

..

Clivina dealata n. sp.

Description. Form slender, subparallel, moderately convex; brownish or reddish with disc of elytra sometimes darker; shining, upper surface (except at sides) with reticulate microsculpture faint (on front) or absent, (except in subsp. *antecessor, q. v.*), but head in part coarsely and pronotum finely punctate. *Head* .74 and .75 width prothorax; eyes rather small, about as long as (oblique) genae; antennae normal, intermediate segments about as wide as long; mandibles short; labrum 7-setose; clypeus truncate, middle part usually (not always) separated from wings by slight notches, with wings narrowly rounded, separated from preocular plates by deeper notches; clypeal suture obsolete; supraocular convexities almost cariniform, separated from swollen preocular plates; frontal sulci widely separated, subparallel, somewhat irregular; clypeus transversely swollen; front convex, not or irregularly and faintly impressed, sometimes with a slight impression at middle, coarsely but variably punctate; neck constriction not much impressed, punctate especially at sides, usually interrupted at middle. *Prothorax* subquadrate, about as long as wide, length/width .97 and .99, slightly narrowed anteriorly; sides nearly straight, slightly converging anteriorly with entire margins and usual setae; anterior margin slightly emarginate; anterior angles narrowly rounded, scarcely prominent; posterior angles with distinct blunt teeth; pronotum with usual impressed lines and finely, inconspicuously punctate, with a more impressed line of coarser punctures on each side behind middle. *Elytra* slightly wider than prothorax, slightly shorter and more oval than in preceding species but otherwise similar, with 3 or 4 striae free at base. *Inner wings* strongly reduced, about half as long as elytra (but sometimes crumpled). *Lower surface* rugose and punctate about as in preceding species, with similar widely spaced apical ventral setae.

Legs as in preceding species, with similar acute teeth at tips of anterior trochanters. *Measurements:* length 4.3–5.2; width *c.* 1.3–1.4 mm.

Types. Holotype ♂ (M.C.Z. No. 30,157) and 15 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington), taken in damp soil but not in very wet places.

Other material. Known only from the types, but the following subspecies represent the species elsewhere in New Guinea.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This new species is evidently related to and perhaps derived from the preceding one (*punticeps*) as shown by many characters including the toothed anterior trochanters. I think, however, that it is a distinct species. Besides having reduced wings, it is smaller and (as shown by the prothoracic proportions) relatively shorter than *punticeps* and paler in color. A subspecies of *deälata* (below) occurs with *punticeps* at Hollandia without intergrading.

Clivina deälata brachyptera n. subsp.

Description. Form as figured (fig. 7); nearly the same as typical *deälata* but with uniformly shorter wing vestiges, which scarcely extend beyond the posterior edge of the metasternum and which are only a small fraction as long as the elytra. Proportions of measured specimens are head .74 and .71 width prothorax; length/width prothorax 1.03 and 1.03; relative width elytra not measured because left elytron of all specimens raised to show inner wings. *Measurements:* Length 4.5–5.4; width *c.* 1.4 mm.

Types. Holotype ♂ (M.C.Z. 30,158) and 21 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington).

Other material. Six specimens from Aitape, **N-E. N. G.**, Aug. 1944 (Darlington), and 38 from Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington and E. S. Ross, California Acad.) are referred to this subspecies, but not as types.

Measured specimens. The ♂ holotype and 1 paratype.

Notes. See under preceding and following subspecies.

Clivina deälata antecessor n. subsp.

Description. Essentially the same as typical *deälata* and subspecies *brachyptera* but with inner wings fully developed, eyes a little larger, and elytra with reticulate microsculpture (with

meshes either slightly longitudinal or imperfect). Color of all specimens piceous with suture and sides of elytra as well as appendages reddish brown. Proportions: head .72 and .75 width prothorax; prothoracic width/length 1.05 and 1.03; width elytra/prothorax *c.* 1.17 and 1.21. *Measurements:* length 5.0–5.5; width 1.5–1.6 mm.

Types. Holotype (sex not determined) (Bishop Mus.) and 3 paratypes all from Kiunga, Fly R. **Papua**, Sept. 24-25 (holotype) and Aug. 1–3, 8–10, 11–13, 1957 (W. W. Brandt). One paratype now in M.C.Z. (No. 30,306).

Measured specimens. The holotype and 1 paratype.

Notes. These specimens were received after the descriptions of *deälata* and *brachyptera* had been drawn. They appear to represent the winged population from which the short-winged subspecies have been derived.

Clivina vigil n. sp.

Description. Subparallel, rather depressed (in genus); rufous, shining, head and discs of pronotum and elytra without reticulate microsculpture (which, however, is present laterally). *Head* (fig. 14) .78 and .81 width prothorax; eyes large and prominent (in genus), genae very short, forming (blunt) right angles with neck; antennae normal, intermediate segments about as long as wide; mandibles short, normal; labrum 7-setose; clypeus typically subtruncate but with angles advanced and dentiform in Nadzab example, middle part separated from wings by shallow, obtuse notches (possibly variable); clypeal wings small, arcuate or subangulate, separated from preocular lobes by notches; clypeal suture obsolete; supraocular convexities cariniform, sharply separated from swollen preocular lobes; frontal sulci rather short, arcuate; front convex (sometimes irregularly so), slightly impressed at middle, rather finely and irregularly punctate; neck constriction typically impressed and punctate only at sides, widely interrupted at middle (but not interrupted in Nadzab example). *Prothorax* subquadrate, slightly wider than long (width/length 1.09 and 1.10), slightly narrowed anteriorly; sides slightly and almost evenly arcuate, with entire margins and usual 2 setae; front edge slightly emarginate; anterior angles rounded, not advanced; posterior angles with distinct but blunt teeth; basal marginal gutter wider and more rugose than usual; disc with usual anterior transverse line and median longitudinal line rather lightly impressed, and with

surface finely, sparsely, inconspicuously punctate. *Elytra* about ¼ wider than prothorax (E/P 1.26 and 1.29), subtruncate at base with rounded humeri; sides almost straight (faintly arcuate) to behind middle, margins crenulate behind humeri; each elytron with 4 striae free at base; striae entire or nearly so, moderately impressed, vaguely or not punctate; intervals slightly convex, 8th not carinate at humeri, 3rd 4-punctate, intervals otherwise not distinctly punctate. *Inner wings* fully developed. *Lower surface:* proepisterna roughened (deeply microreticulate) externally, more or less punctate internally; abdomen impunctate but with close reticulate microsculpture; last ventral segment with 2 setae on each side wide apart. *Legs:* front tibiae 3-dentate; middle tibiae (fig. 26) with spur on outer side near apex about as long as tibial width. *Measurements:* length *c.* 5.7–6.1; width *c.* 1.7–1.8 mm.

Types. Holotype ♀ (M.C.Z. No. 30,159) and 1 paratype from Dobodura, Papua, Mar.-July 1944 (Darlington). I do not know the habitat of this species.

Other material. One, Nadzab, Markham Valley, **N-E. N. G.**, Aug. 1944 (K. V. Krombein, U.S.N.M.), differing from the types as indicated in the preceding description.

Measured specimens: the holotype and paratype from Dobodura.

Notes. This species is sufficiently distinguished from other New Guinean species in the key above. It resembles and is probably related to *denticollis* Sloane of Australia (described from (NW?) Western Australia and represented in the M.C.Z. by specimens from the Burdekin River near Charters Towers, Queensland), but differs in detail, notably in the shallower clypeal notches and wider basal pronotal gutter of *rigil*.

Clivina deleta n. sp.

Description. Rather broad (in genus), depressed; rufous; shining, reticulate microsculpture faint on head, virtually absent on pronotum and elytra. *Head* .78 and .76 width prothorax; eyes smaller and less convex than in preceding species, genae oblique; antennae normal, median segments about as wide as long; mandibles short; labrum 7-setose; clypeus subtruncate or broadly emarginate, middle part usually (not always) separated from wings by slight notches; clypeal wings small, separated from preocular plates by deeper notches; clypeal suture usually not impressed, but front usually with one or two transverse

impressed lines which simulate a clypeal suture; supraocular convexities sharply separated from swollen preocular plates; frontal sulci deep, slightly diverging and almost reaching neck constriction posteriorly; front moderately convex but usually with irregular impressions or transverse impressed lines as noted above, not distinctly punctate; neck constriction shallow, punctate, sometimes interrupted at middle. *Prothorax* subquadrate, usually slightly narrowed anteriorly, width/length 1.00 and 1.00; sides very broadly arcuate, almost straight at middle, with usual entire margins, and each with usual 2 setae but with posterior one farther in from margin than usual; front of prothorax subtruncate or broadly emarginate, with anterior angles very narrowly rounded and only slightly advanced; posterior angles distinctly but obtusely dentate; pronotum with well impressed median line but with anterior transverse impression obsolete at least at middle (an irregular line of black pigment under the surface marks the usual position of the transverse impression so that it is necessary to look carefully to see that the impression itself is absent); surface of pronotum finely, irregularly, inconspicuously punctate. *Elytra* about ⅓ wider than prothorax (E/P 1.31 and 1.31), broadly emarginate in front with tubercles at ends of second and third intervals; humeri rounded, margins behind them almost straight to behind middle, slightly crenulate behind humeri; 4 striae on each elytron free at base; striae entire, vaguely punctate; intervals slightly convex, 7th briefly and inconspicuously carinate at base, 3rd 4-punctate on outer side, intervals vaguely or not punctulate. *Inner wings* fully developed. *Lower surface:* proepisterna rugose and sides of body posteriorly also more or less rugose or subpunctate; anal segment with usual 2 setae on each side widely separated. *Legs:* front tibia 4-dentate[1] middle tibia (fig. 27) with spur on outer side near apex not longer than tibial width. *Measurements:* length 4.5-5.5; width ±1.5 mm.

Types. Holotype ♂ (M.C.Z. No. 30,160) and 5 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington). I did not distinguish this species in the field and do not know its habits (see under following species).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Superficially this species resembles several other small,

[1] In one example the right front tibia is only 3-dentate, without trace of upper tooth, although the left front tibia is normally 4-dentate, with upper tooth small but distinct and with an apical seta.

depressed, reddish species found in New Guinea, but it differs from the others in (among other things) the partial deletion of the anterior transverse impressed line of the pronotum.

Clivina rufula n. sp.

Description. Subparallel, slightly depressed; rufous; shining, almost entire upper surface without reticulate microsculpture (but latter sometimes faintly visible on head). *Head* (fig. 15) .75 and .74 width prothorax; eyes rather prominent (but less so than in *vigil*), genae short; antennae normal, median segments about as long as wide; mandibles short; labrum 7-setose; clypeus subtruncate, very broadly emarginate, middle part continuous (or nearly so) with wings, which are rounded, separated from preocular lobes by usually obtuse notches; clypeal suture absent; supraocular convexities continuous with swollen preocular lobes; frontal sulci well impressed, irregular, diverging anteriorly and posteriorly; front almost evenly convex, sometimes vaguely impressed at middle, slightly or not punctate; neck constriction almost absent, slightly punctate at sides, widely interrupted at middle. *Prothorax* subquadrate, more or less narrowed anteriorly, width/length 1.02 and 1.06; sides very broadly and slightly arcuate, with entire margins each with usual 2 setae; prothorax anteriorly subtruncate, broadly emarginate; anterior angles very narrowly rounded, not or only slightly prominent; posterior angles subdentate; disc with usual impressed lines, surface finely and inconspicuously punctate. *Elytra* nearly ¼ wider than prothorax (E/P 1.24 and 1.22); emarginate anteriorly, each with a tubercle at base of 2nd interval; humeri rounded, sides behind them very broadly arcuate, almost straight at middle, slightly crenulate behind humeri; 3 or 4 striae free at base on each elytron; striae entire, moderately punctate; intervals moderately convex, 7th briefly and inconspicuously carinate at humeri, 3rd 3-punctate on outer edge; intervals faintly or not distinctly punctulate. *Inner wings* fully developed. *Lower surface:* sides of body slightly roughened or microreticulate, with sides of some ventral segments shallowly punctate; last ventral with 2 apical setae on each side wide apart. *Legs:* front tibia 3-dentate on outer side; middle tibia (fig. 28) with moderate spur on outer side near apex. *Measurements:* length 4.2-4.8; width *c.* 1.3-1.5 mm.

Types. Holotype ♂ (M.C.Z. No. 30,161) and 69 paratypes

all from Dobodura, Papua, Mar.-July 1944 (Darlington). According to my notes, small, depressed, rufous species of *Clivina*, including the present one, were found under stones and other cover by rivers, among grass roots in sand, and at light.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. In form of clypeus and front this species approaches the *australasiae* group, but it differs from typical members of the group in having the 3rd elytral interval with 3 rather than 4 punctures.

Clivina tripuncta n. sp.

Description. Rather stout (in genus), normally convex; black or dark reddish brown, margins of elytra usually (narrowly or broadly) paler, and appendages paler brown; shining, microsculpture faint or absent on head, virtually absent on pronotum except at extreme base and on elytra except at sides and apex. *Head* .71 and .71 width prothorax; eyes prominent but not very large, genae oblique, antennae normal, median segments slightly wider than long; mandibles short; clypeus subtruncate, broadly emarginate, middle part not separated from wings, latter separated from preocular lobes by distinct notches; labrum 7-setose; supraocular convexities slightly or not separated from swollen preocular lobes; frontal sulci subparallel, irregular, slightly diverging anteriorly and posteriorly; clypeal suture not impressed; front convex, sometimes irregularly impressed, usually more or less punctate at middle; neck constriction impressed (and punctate) only at sides, usually widely interrupted at middle. *Prothorax* rather wide, slightly narrowed anteriorly, W/L 1.10 and 1.09; sides broadly, slightly arcuate except often subsinuate near middle, with entire margins each with usual 2 setae; prothorax broadly emarginate anteriorly, anterior angles very narrowly rounded but scarcely advanced; posterior angles subdentate; disc with usual impressed lines and also some scattered punctation of mixed (moderate and fine) punctures. *Elytra* rather short (in genus), about ⅕ wider than prothorax (E/P 1.21 and 1.20), slightly emarginate anteriorly, with tubercles at bases of 2nd and usually 3rd intervals; humeri rounded, sides behind them broadly arcuate except almost straight before middle, slightly crenulate at and behind humeri; each elytron with 3 or 4 striae free at base; striae well impressed, entire, rather finely punctate; intervals moderately convex, 7th not

distinctly carinate at humeri, 3rd 3-punctate on outer edge, intervals not distinctly punctate. *Inner wings* fully developed. *Lower surface:* procpisterna rugose-punctate; sides of abdomen finely rugose near base, subpunctate at sides of posterior segments, which are shining, almost without surface sculpture at middle; last ventral with 2 setae on each side wide apart. *Legs:* front tibia 4-dentate but upper tooth minute; middle tibia (fig. 29) with a short spur on outer side less than 1/4 from apex. *Measurements* (Dobodura series only): length 4.1-5.2; width *c.* 1.4-1.7 mm. (specimens from some other localities run larger).

Types. Holotype ♂ (M.C.Z. No. 30,162) and 37 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington).

Additional material. **Papua**: 14, Milne Bay, Aug. 1944 (Darlington); 2, Fly R. 5 mi. below Palmer R., May 1936, and 1, Palmer R. at Black R., June 1936 (Archbold Exp., A.M.N.H.). **N-E. N. G.**: 2, Torricelli Mts., Mobitei, 750 m. (*c.* 2450 ft.), Feb. 28-Mar. 4 and Mar. 5-15, 1959 (W. W. Brandt, Bishop Mus.); 1, Torricelli Mts., Mokai Village, 750 m. (*c.* 2450 ft.), Jan. 1-23, 1959 (W. W. Brandt, Bishop Mus.); 1, Adelbert Mts., Wanuma, 800-1000 m. (*c.* 2600-3250 ft.), Oct. 24, 1958 (J. L. Gressitt, Bishop Mus.); 1, Sambeang, 400 m. (about 1300 ft.), Mongi Watershed Huon Peninsula, Apr. 21, 1955 (E. O. Wilson, M.C.Z.); 21, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 3, Hollandia, July-Sept. 1944 (Darlington), 3, same locality, May 1945 (H. Hoogstraal, M.C.Z.), and 1, same locality, Feb. 12, 1945 (Hoogstraal, Chicago Mus.); 1, Sabron, Cyclops Mts., Camp 1, 1,200 ft., May 15, and 1, same locality, Camp 2, 2,000 ft., July 1936 (Cheesman); 4, Maffin Bay, Aug. 1945 (Darlington), and 1, same locality, Oct. 1944 (K. V. Krombein, U.S.N.M.); 1, Fac Fac, June 1939 (Wind, M.C.Z.); 2, "Neth. New Guinea," Sept. 1944 (T. Aarons, California Acad.); 1, Camp 1, Mt. Nok, Waigeu Is., 2,500 ft., May 1938 (Cheesman). Of these, 1 of my Hollandia specimens and the single specimens from Fac Fac and Waigeu Is. have the 3rd intervals with 4 (not 3) punctures; 1 of my Hollandia specimens has the left elytron 3- and the right only 2-punctate; and the specimens from the Fly and Palmer R. and Sambeang, though 3-punctate, are larger than usual, about 6 mm. or a little longer. I refer these specimens to this species with some doubt. The species apparently occurs throughout New Guinea at low altitudes, usually, I think, in shaded swamps. I have a typical specimen also from Cape Gloucester, **New Britain**.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This somewhat variable species is further discussed and compared in "Notes" under the following species, *erugatella.*

Clivina erugatella n. sp.

Description. Rather stout, slightly depressed; black or piceous, sometimes with sides of elytra paler, legs rather dark brown, antennae paler brown; shining, reticulate microsculpture faint or absent on front, present at sides and base but indistinct on disc of pronotum, and usually absent or indistinct on main part of elytral disc but present on sides and apex of elytra and sometimes extending to part of disc. *Head* .63 and .67 width prothorax; eyes not large but rather prominent; genae rather short; antennae normal, median segments about as long as wide; mandibles short, labrum 7-setose; clypeus subtruncate except wings slightly advanced, middle part continuous with wings, latter separated from preocular lobes by shallow notches; clypeal suture absent; supraocular convexities smoothly continuous with swollen preocular lobes; frontal sulci subparallel, sinuous anteriorly; front varying from smoothly convex and continuous with clypeus to slightly irregularly impressed, sometimes with median impression, usually finely and inconspicuously punctulate, sometimes with a few coarser punctures; neck slightly impressed at sides, not at middle. *Prothorax* rather large, with pronotum rather depressed; width/length 1.09 and 1.13; somewhat narrowed anteriorly; broadly emarginate in front, anterior angles very narrowly rounded, almost angulate, not produced; posterior angles obtusely subangulate, subdentate; sides broadly and slightly arcuate, each with entire margin and usual 2 setae; disc with usual impressed lines, surface rather finely and inconspicuously punctulate. *Elytra* rather short (in genus), slightly wider than prothorax (E/P 1.14 and 1.16); slightly emarginate anteriorly, with tubercles at bases of first three intervals; each elytron with 3 striae free at base (in all specimens); striae entire, well impressed, finely punctate or subpunctate; intervals moderately convex, 7th briefly or not distinctly cariniform at base, third usually 4-punctate (see notes), surface of intervals not or indistinctly punctulate. *Inner wings* fully developed in type series, but reduced in some other specimens (see notes). *Lower surface:* proepisterna with isodiametric microsculpture (but not punctate) externally, rugose or punctate internally;

sides of posterior ventral segments not or lightly punctate; reticulate microsculpture visible but lightly impressed at middle of abdomen; apical ventral segment with usual 2 setae on each side wide apart. *Legs:* anterior tibia weakly 3-dentate; middle tibia (fig. 30) with a moderate spur on outer side near apex. *Measurements:* length 5.0-6.6; width 1.6-2.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,163) and 32 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington).

Other material. **N-E. N. G.**: 36, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 8, Maffin Bay, Aug. 1944 (Darlington), and 2, same locality, Aug. and Sept. 1944 (E. S. Ross, California Acad.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Most individuals of this species have 4 punctures on the third interval of each elytron, but there are a few exceptions: one from Hollandia has only 3 punctures on each side; 2 specimens from Aitape have 5 punctures on one side, 4 on the other, and one has 4 on one side, 3 on the other; and one specimen from Maffin Bay has 4 on one side, 3 on the other. All specimens from Hollandia and Maffin Bay have the inner wings fully developed, but of the 36 from Aitape only 2 have fully developed wings and the other 34 have the wings reduced to about half the length of the elytra.

This species is very similar to the preceding one, *tripuncta*, but I feel sure they are different species, although no single character will distinguish every specimen. The numbr of punctures on the third elytral interval will distinguish most specimens. On direct comparison the present species, *crugatella*, has slightly smaller eyes than *tripuncta*, a slightly different clypeal outline (more truncate at middle with wings more distinctly but still slightly advanced), usually less punctate head, relatively slightly larger and flatter prothorax, and abdomen less punctate but with more distinct reticulate microsculpture, and at Aitape *crugatella* usually has reduced wings, *tripuncta* always fully developed ones. In *tripuncta* the elytra have 3 or 4 striae free at base; in *crugatella*, always 3. Moreover, *tripuncta* apparently occurs throughout New Guinea, while *crugatella*, though common where it occurs, is known only from three localities all near the middle part of the north coast. I did not clearly distinguish these two species in the field. They probably both occur in wet places, but I do not know whether they actually occur together.

Clivina erugata n. sp.

Description. About average form and convexity; black or piceous, appendages reddish or brownish; reticulate microsculpture faint or absent on front of head and on middle of pronotum and elytra, but present laterally. *Head* (fig. 17) .68 and .67 width prothorax; eyes normally convex, genae short and oblique; antennae normal, median segments about as long as or slightly longer than wide; mandibles short; labrum 7-setose; clypeus broadly emarginate, with wings not separated from middle but slightly advanced, separated from preocular lobes by distinct notches; clypeal suture absent; supraocular convexities continuous with or only slightly separated from swollen preocular lobes; frontal sulci subparallel, sinuous anteriorly; front almost evenly convex or slightly and irregularly impressed, slightly punctulate, sometimes with a few coarser punctures near middle; neck constriction slightly impressed and punctate at sides, usually interrupted at middle. *Prothorax* about as long as wide (L/W 1.05 and .96), narrowed anteriorly (B/A 1.52 and 1.57); subtruncate or broadly emarginate anteriorly; anterior angles narrowly rounded, not advanced; posterior angles obtusely angulate, bluntly dentate; lateral margins entire, each with usual 2 setae; disc normally convex, with usual impressed lines, and faintly punctulate. *Elytra* slightly wider than prothorax (E/P 1.21 and 1.25); base slightly emarginate, with tubercles at bases of 2nd and 3rd intervals; humeri rounded, sides behind humeri nearly straight to or beyond middle; each elytron with usually 3 (sometimes 4) striae free at base; striae entire, well impressed, punctulate; intervals moderately convex, 3rd 4-punctate, 7th and 8th united but scarcely (or briefly) carinate at humerus, intervals not distinctly punctulate. *Inner wings* fully developed. *Lower surface:* proepisterna with reticulate microsculpture and some wrinkles externally, lightly rugose internally; abdomen microreticulate, vaguely punctate laterally; last ventral with 2 setae each side far apart. *Legs:* front tibia 3-dentate; middle tibia (fig. 31) with a moderate spur on outer side near apex. *Measurements:* length 6.5-8.0; width 2.0-2.5 mm.

Types. Holotype ♂ (M.C.Z. No. 30,164) and 28 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington).

Other material. **Papua**: 10, Oro Bay, Dec. 1943 (Darlington). **N-E. N. G.**: 3, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 8, Hollandia, July- Sept. 1944 (Darlington), and 1, same locality, Apr. 1945 (B. Malkin, U.S.N.M.); 2, Hollandia area, W.

Sentani, Cyclops Mts., 50-100 m. (*c.* 150-325 ft.), June 22-24, 1959 (J. L. Gressitt, Bishop Mus.) in light trap; 13, Maffin Bay, Aug. 1944 (Darlington), and 3, same locality, June and Aug. 1944 (E. S. Ross, California Acad.); and 1, "Neth. New Guinea," Oct. 20, 1944 (T. Aarons, California Acad.). I have this species also from Cape Gloucester, **New Britain**, Jan.-Feb. 1944 (Darlington), and Muda P. T. Area, New Georgia Is., British **Solomons**, Nov. 20, 1943 (J. G. Franclemont, Cornell U. Coll.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This is the only species I know from New Guinea that comes close to answering the short description of *Clivina schaubergeri* Kult, but *schaubergeri* is evidently slightly larger, with more slender antennae than the present species.

Clivina basalis Chaudoir

Chaudoir 1843, Bull. Soc. Nat. Moscou **16**, No. 4, p. 733.
Sloane 1896, Proc. Linn. Soc. New South Wales **21**, pp. 212 (key), 213.
—— 1905, Proc. Linn. Soc. New South Wales **29**, p. 721 (key).
Csiki 1927, Coleop. Cat., Carabidae, Carabinae, p. 498 (see for synonymy and additional references).
Clivina ephippiata Putzeys (new synonym).
Putzeys 1846, Mem. Soc. R. Sci. Liege **2**, p. 602.
Sloane 1920, Proc. Linn. Soc. New South Wales **45**, p. 320 (see for Australian synonyms).
Csiki 1927, Coleop. Cat., Carabidae, Carabinae, p. 502 (see for additional references).

Description. See key to species of *Clivina*, and following notes.

Types. Of *basalis*, from "Nouvelle Hollande" (= Australia), presumably now in the Oberthür collection, Paris Mus.; of *ephippiata*, from Java, in the Chevrolat collection, Oxford University Mus.

Occurrence in New Guinea. **Papua**: 5, Dobodura, Mar.-July, 1944 (Darlington), taken at light; 1, Oro Bay, July 12, 1944 (A. H. Mallery, Bishop Mus.). Also 1 from Koitaki, N. G., 1,500 ft., Oct.-Nov. 1928. (Pemberton, Hawaiian Sugar Planters' Association); I have been unable to locate this locality.

Notes. This species varies in color both individually and geographically. Specimens from temperate **southeastern Australia** (*e.g.* Sydney and Brisbane) and from **New Guinea** and **Celebes** usually have the elytra bicolored, red anteriorly and black posteriorly, with the black color often reaching the 9th intervals

and margins laterally (*basalis*). Specimens from **tropical Australia** and **Java** usually have black area of the elytra reduced to a large, but variable, post-median macula (*ephippiata*). There is some individual variation too, and entirely pale (immature?) individuals sometimes occur with the bicolored ones. This widely distributed species (if it is all one species) deserves more study than I can give it now. For the present I can see no real difference except color to separate the geographical populations, and the color forms are distributed so irregularly (discontinuously) that I do not care to treat them as subspecies. Sloane (1920) has already indicated the apparent identity of the tropical Australian and Javan forms.

Clivina subfusa n. sp.

Description. A little broader than usual in genus; normally convex; reddish piceous, disc of elytra often darker; reticulate microsculpture faint or absent on front of head and discs of pronotum and elytra, present on posterior declivity of pronotum (isodiametric or slightly transverse) and sides and apices of elytra (slightly longitudinal). *Head* .68 and .69 width prothorax; eyes moderately prominent but enclosed behind by short genae which form obtuse (nearly right) angles with neck; antennae normal, middle segments slightly longer than wide; mandibles short; labrum 7-setose; clypeus broadly emarginate, wings not separated from middle part but separated from preocular lobes by moderate notches; clypeal suture absent; supraocular convexities separated from preocular lobes by impressions; frontal sulci curving outward posteriorly, almost straight between eyes, sinuous anteriorly; front irregularly punctate; neck constriction scarcely impressed but marked at sides by punctate areas which are usually (not always) separated by an impunctate median space. *Prothorax* slightly wider than long, W/L 1.07 and 1.08; base/apex 1.45 and 1.43; sides slightly arcuate; anterior margin broadly emarginate, but anterior angles scarcely advanced; posterior angles obtuse, dentate; median longitudinal and anterior transverse impressed lines normal; disc finely punctate. *Elytra* 1.30 and 1.23 width prothorax; humeri normally rounded; each elytron with usually 3 (rarely 4) striae free at base; striae entire, well impressed, punctulate; intervals moderately convex, inner ones tuberculate or subtuberculate at extreme base, 7th subcarinate at base, 3rd with 4 discal punctures (sometimes very inconspicuous) near outer

edge; surface of intervals vaguely or not punctulate. *Inner wings* fully developed. *Lower surface:* proepisterna strongly rugulose, and also lightly microreticulate externally; ventral segments microreticulate, and with punctate-rugulose areas laterally, these areas being near the anterior margins of the last three segments and entirely across the base of the last segment; last ventral segment with 2 setae on each side widely separated. *Legs:* anterior tibiae 3-dentate; middle tibiae (fig. 32) with spur short, near apex. *Measurements:* length 6.6-7.3; width 2.1-2.3 mm.

Types. Holotype (sex not det.) (M.C.Z. No. 30,165) and 2 paratypes from Chimbu Valley, Bismarck Range, **N-E. N. G.**, 5,000-7,500 ft., Oct. 1944 (Darlington), taken in open country, presumably in wet places. Additional paratypes as follows. **N-E. N. G.**: 1, Baindoang, Salawaket Range, 1800 m. (*c.* 5850 ft.), Sept. 15, 1956 (E. J. Ford Jr., Bishop Mus.). **Neth. N. G.**: 1, Baliem Camp, Snow Mts., 1,600 m. (about 5,200 ft.), Dec. 1938 (Toxopeus); 4, Ibele (Iebele) Camp, Snow Mts., 2,250 m. (about 7,325 ft.), Nov.-Dec. 1938 (Toxopeus); 1, Fae Fae, S. coast of Bomberai, 100-700 m. (*c.* 325-2300 ft.), June 9, 1959 (J. L. Gressitt, Bishop Mus.) in light trap.

Other material. One, Dobodura, **Papua**, Mar.-July 1944 (Darlington). This specimen is not typical; it has the 3rd intervals only 3-punctate; more material is needed to show whether it is really *subfusa* or whether it may be a lowland form related to (mountain-living) *subfusa.*

Measured specimens. The holotype and one paratype from Chimbu Valley.

Notes. This species is distinguished from others in New Guinea by characters given in the key, above. It is similar to *truncata* Putzeys as identified by Andrewes, but, as compared with Andrewes' specimen of *truncata,* the new species has smaller eyes and differs slightly in other ways: e.g. the rugose-punctate line across the neck is almost entire in *truncata,* usually (but not always) widely interrupted at middle in *subfusa.*

Clivina gressitti n. sp.

Description. Slightly more parallel and more convex than average (incipiently subcylindrical, but not strongly so); rufous; rather shining, reticulate microsculpture almost absent above. *Head* .70 and .67 width prothorax; eyes of only moderate size but prominent, genae forming *c.* right angles with sides of

neck; antennae normal, rather short, intermediate segments as wide as or slightly wider than long; mandibles short; labrum 7-setose; clypeus subtruncate with wings slightly advanced, middle part not separated from wings; wings separated from preocular lobes by shallow notches; clypeal suture absent; supraocular convexities separated or very nearly separated from preocular lobes by slight impressions; frontal sulci long, somewhat diverging posteriorly, sinuous anteriorly; front with or without median fovea but always with a few scattered median punctures and sparse, scattered punctules; neck constriction weak, punctate only at sides, interrupted at middle. *Prothorax* slightly longer than wide (L/W 1.05 and 1.02), moderately narrowed in front, slightly so behind (base/apex 1.29 and 1.38); sides nearly straight and converging anteriorly for much of length, faintly sinuate before middle; apex subtruncate or very broadly emarginate; posterior angles obtuse-rounded, finely bluntly denticulate; disc with usual impressed lines, more distinctly punctate than usual, but punctures rather widely spaced and variable in size: no distinct (or at most an indefinite) line of coarser punctures each side basally. *Elytra* only slightly wider than prothorax (E/P 1.09 and 1.04); humeri rounded-prominent; margins slightly crenulate behind humeri; each elytron with 3 striae free at base; striae entire (slightly abbreviated apically as usual), moderately impressed, punctulate; intervals convex, not distinctly punctulate, 3rd very inconspicuously 4-punctate, 8th rather weakly carinate or subcarinate at base. *Inner wings* fully developed. *Lower surface:* proepisterna and sides and apex of abdomen rather coarsely punctate; last ventral with 2 apical setae on each side wide apart. *Legs:* front femur very stout; front tibia 3-dentate with 4th tooth indicated; front trochanter not prominent at apex; middle tibia (fig. 36) with spur short (about ½ long as width of tibia), less than ¼ from apex of tibia. *Measurements:* length 5.3-5.5; width 1.4-1.5 mm.

Types. Holotype (sex not determined) (Bishop Mus.) and 3 paratypes (1 in M.C.Z., No. 30,307) all from Kiunga, Fly R., **Papua**, various dates in July, Aug., and Oct., 1957 (W. W. Brandt).

Measured specimens. The type and 1 paratype.

Notes. This species has many of the same technical characters as *subfusa*, including the short tibial spur, but differs notably in form, being more slender and parallel-sided. The difference is

well shown by the difference in proportions of prothorax and in ratio of elytra/prothorax.

Clivina sellata Putzeys

Putzeys 1866, Ent. Zeitung (Stettin) **27**, p. 40.
Sloane 1905, Proc. Linn. Soc. New South Wales **29**, p. 719 (in key).
Clivina inconspicua Sloane (new synonym).
Sloane 1896, Proc. Linn. Soc. New South Wales **21**, p. 277.
—— 1905, Proc. Linn. Soc. New South Wales **29**, p. 719 (in key).
(Unimportant references omitted.)

Description. See key. *C. sellata* is a small, rather convex (subcylindrical) species, typically (in Australia) dark brown, with elytra paler with a post-median discal dark spot; the (color form?) *inconspicua* is entirely testaceous.

Types. Of *sellata*, from **Australia**, in the Chaudoir collection now presumably with the Oberthür collection, Paris Mus.; of *inconspicua*, from King's Sound, **Australia**, in Macleay Mus., Sydney.

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.-July, 1944 (Darlington).

Notes. C. sellata is widely distributed in eastern and northern Australia. Testaceous individuals are to some extent geographically segregated, but they do not seem to form a clearly defined geographical subspecies. The single example from New Guinea is testaceous and is less convex than usual in *sellata*, but I find no positive characters to separate it. *C. sellata* and related species in Australia are difficult to distinguish and in need of study.

In Australia, *sellata* occurs in sandy banks of streams.

Clivina ferruginea Putzeys

Putzeys 1868, Ann. Soc. Ent. Belgique **11**, p. 14.
Sloane 1896, Proc. Linn. Soc. New South Wales **21**, pp. 198, 199, 275.
—— 1905, Proc. Linn. Soc. New South Wales **29**, p. 720 (key).
(Unimportant references omitted.)

Description. See key; *ferruginea* is a plain brown species of the difficult *australasiae* group, with 4-dentate anterior tibiae.

Type. From Rockhampton, **Australia**, in the Castelnau collection. The collections and parts of collections made by Castelnau are widely scattered. I do not know where the type of *ferruginea* now is. I did not find it at Melbourne in 1957.

Occurrence in New Guinea. **Papua**: 2, Port Moresby, Feb.-May 1943 (W. B. Jones, A. M. N. H.); 1, same locality, May 1947 (L. Jones, British Mus.).

Notes. This species is common and widely distributed in northern Australia, in wet ground near water. That it extends to southern New Guinea is not surprising. The country around Port Moresby is much like parts of northern Australia.

Clivina fessa n. sp.

Description. Slightly broader and more depressed than usual; reddish-piceous, appendages paler; moderately shining, but elytra with at least traces of reticulate microsculpture extending onto disc. *Head* (fig. 16) .76 and .73 width prothorax; eyes large (in genus); genae short, not entirely enclosing eyes behind, forming right angles with sides of neck; antennae normal, intermediate segments about as long as wide; mandibles short; labrum 7-setose; clypeus subtruncate, very broadly emarginate, with middle part not separated from wings but latter separated from preocular lobes by moderate notches; clypeal suture absent; supraocular convexities separated from preocular lobes by variable (sometimes slight) impressions; frontal sulci straight and diverging posteriorly, irregular and curving outward anteriorly; front irregularly convex, finely and sparsely punctate or with coarser punctures anteriorly; neck scarcely impressed, punctate at sides, zone of punctures irregularly interrupted at middle. *Prothorax* slightly wider than long (W/L 1.10 and 1.08); base/apex 1.33 and 1.29; sides slightly arcuate; front margin truncate-emarginate, with anterior angles scarcely advanced; posterior angles rounded-obtuse but marked by blunt teeth; median longitudinal line and anterior transverse line well impressed; disc punctulate and transversely strigose but without reticulate microsculpture except at sides and base (but reticulations sometimes extend to parts of disc). *Elytra* somewhat wider than prothorax (E/P 1.34 and 1.30); humeri rounded but moderately prominent; sides subparallel, subcrenulate behind humeri; each elytron with 3 striae free at base; striae entire, moderately impressed, faintly punctulate; intervals slightly convex, 3rd 4-punctate on outer edge, neither 7th nor 8th distinctly carinate at base; intervals with reticulate microsculpture very lightly impressed on disc and sometimes absent in an anterior-median area. *Inner wings* fully developed. *Lower surface:* proepisterna rather strongly rugose or punctate-rugose; ventral

segments of abdomen rugose or punctate laterally, the rugose-punctate areas almost meeting across the base of the apical segment, which is otherwise lightly microreticulate; two apical setae on each side wide apart. *Legs:* anterior femora (fig. 38) more slender than usual; anterior tibia strongly 3-dentate with 4th (upper) tooth barely indicated; middle tibia (fig. 33) with spur about as long as width of tibia, and less than ¼ tibial length from apex. *Measurements* (types only): length 6.6-6.9; width 2.0-2.1 mm.

Types. Holotype (M.C.Z. No. 30,166) (sex not det.) from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington); 1 paratype, same locality, May 1945 (Hoogstraal, M.C.Z.); 1 paratype, Fac Fac, **Neth. N. G.**, June 1939 (R. G. Wind, M.C.Z.).

Other material. One, Camp Nok, **Waigeu Is.**, 2,500 ft., April 1938 (Cheesman); this specimen is smaller (*c.* 5.6 mm.) than the types, with elytral margins more strongly crenulate. Also 1, Guadalcanal, **Solomons**, July 15, 1943 (P. W. Oman, U.S.N.M.), which has the characters of *fessa* except that the 7th elytral interval is almost carinate at base.

Measured specimens. The type and paratype from Hollandia.

Notes. Although this species is superficially rather similar to several others that occur in New Guinea, it is well characterized by the relatively slender anterior femora, the position of the spur of the middle tibia, and (usually) the lack of a distinct carina at the base of the 7th or 8th elytral intervals. I do not know the relationships of the species.

Clivina sansapor n. sp.

Description. Subparallel, about average convexity; reddish piceous, appendages paler; moderately shining, most of upper surface without reticulate microsculpture but latter visible at extreme margins and basal declivity of pronotum and sides and apex of elytra. *Head* .73 and .71 width prothorax; eyes moderately prominent but almost enclosed behind by short genae, which form almost right angles with neck; antennae normal, middle segments about as long as wide; mandibles short; labrum 7-setose; clypeus subtruncate, or very broadly emarginate, with wings not separated from middle part but separated from preocular lobes by moderate notches; clypeal suture absent; supraocular convexity sharply separated from swollen preocular lobes; frontal sulci subparallel between eyes, sinuous anteriorly; front slightly convex with a few punctures near middle; neck

constriction only a little impressed but marked by lateral punctate areas which meet or almost meet at middle. *Prothorax* as long as or slightly longer than wide (L/W 1.04 and 1.00); base/apex 1.33 and 1.36; sides almost straight (actually faintly subsinuate) in outline, slightly converging anteriorly; apex subtruncate, very broadly emarginate; anterior angles not advanced; posterior angles obtuse, marked by distinct blunt denticles; median longitudinal line and anterior transverse line normally impressed; a well marked longitudinal group of punctures on disc on each side behind middle slightly nearer margin than median line; disc otherwise at most faintly punctulate, with a few irregular transverse strigae. *Elytra* slightly wider than prothorax (E/P 1.14 and 1.13); humeri rounded but prominent; each elytron with three striae free at base; striae well impressed basally, very light toward apex, punctulate; intervals slightly convex, 3rd 4-punctate on outer edge, 8th carinate at base; surface of intervals not distinctly punctulate. *Inner wings* fully developed. *Lower surface:* proepisterna rugulose-punctate internally, microreticulate externally; abdomen microreticulate, more or less punctate laterally; last ventral segment punctate especially laterally but with some punctures scattered over most of surface, with 2 apical setae on each side wide apart. *Legs* rather stout; anterior tibiae strongly 3-dentate, with 4th (upper) tooth indicated by a slight obtuse angle; middle tibiae (fig. 34) with spur long, about ⅓ from apex. *Measurements:* length 6.1-6.6; width 1.6-1.7 mm.

Types. Holotype ♂ (M.C.Z. No. 30,167) and 3 paratypes all from Sansapor, **Neth. N. G.**, Aug. 1944 (Darlington).

Other material. Three, Kiunga, Fly R., July 23-25, Aug. 5-7, 14-17, 1957 (W. W. Brandt, Bishop Mus.). These specimens are doubtfully assigned here. They may be variants of *brandti*.

Measured specimens. The holotype and 1 paratype.

Notes. This species is distinguished from similar ones in New Guinea primarily by the ventral punctation. I do not know its relationships.

Clivina csikii Kult

Kult 1951, Acta Soc. Ent. Czechoslovakia **48**, pp. 29, 30.

Description (checked against the type). More slender and convex than average; nearly black, appendages yellowish; rather shining, reticulate microsculpture indistinct or absent on front

and on discs of pronotum and elytra, present at sides and base pronotum and sides and apex of elytra. *Head* .80 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with sides of neck; antennae normal, intermediate segments as wide as or slightly wider than long; mandibles short; labrum 7-setose; clypeus subtruncate, very slightly emarginate, middle part not separated from wings and wings not advanced; wings separated from preocular lobes by moderate notches; clypeal suture absent; supraocular convexities separated from preocular lobes by well defined impressions; frontal sulci straight and parallel between eyes, sinuous anteriorly; front with slight median impression, rather vaguely punctate; neck impression rather weak, punctate at sides, interrupted at middle. *Prothorax* longer than wide (L/W 1.09), slightly narrowed anteriorly (base/apex 1.27); sides nearly straight; apex subtruncate (broadly emarginate at middle); posterior angles rounded except marked by very faint sinuations; disc with usual impressed lines, finely and sparsely punctulate, with line of coarser punctures each side behind middle. *Elytra* slightly wider than prothorax (E/P 1.14); humeri prominent but rounded; each elytron with 3 striae free at base; striae entire (except normally abbreviated at extreme apex), well impressed, punctulate; intervals convex, 3rd 4-punctate on outer edge, 8th forming a long, fine carina at base. *Inner wings* fully developed. *Lower surface:* proepisterna microreticulate or rugulose but not punctate; most of abdomen including most of last ventral segment closely microreticulate but not punctate; last ventral segment with 2 setae on each side wide apart. *Legs:* front tibiae strongly 3-dentate with 4th (upper) tooth indicated; middle tibia with spur about ¼ from apex and about as long as tibial width. *Measurements:* length *c.* 5.0 (given by Kult as 4.8, but the specimen is not quite straight); width *c.* 1.3 mm.

Type. From Madang (Friedrich-Wilh.-hafen), **N-E. N. G.**, 1901 (Biró, Hungarian National Mus.). I am indebted to Dr. Z. Kaszab for an opportunity of examining it.

Measured specimen. The type.

Notes. I have seen no other specimen of this species. It occurs within the geographical range of the following species, which is probably related but distinct. See notes under the following species.

Clivina inopaca n. sp.

Description. Form average, normally convex; black or brownish; antennae, mouth parts, and legs (irregularly) brown; shining, microsculpture indistinct or absent on discs of pronotum and elytra, present at sides and base of pronotum and sides and apex of elytra. *Head.* .74 and .75 width prothorax; eyes moderately large and prominent; genae short, forming *c.* right angles with neck; antennae normal, intermediate segments about as long as wide; mandibles short; labrum 7-setose; clypeus very broadly emarginate, middle part not separated from wings, latter separated from preocular lobes by variable notches; clypeal suture absent; supraocular convexities separated from preocular lobes by impressions; frontal sulci straight and parallel between eyes, sinuous anteriorly; front with median impression and a few scattered punctures; neck only slightly impressed but with transverse punctate areas on each side, sometimes almost meeting at middle. *Prothorax* as wide as long (W/L 1.00 and 1.03), moderately narrowed anteriorly (B/A 1.37 and 1.34); sides slightly arcuate, almost straight at middle, sometimes subsinuate, sometimes slightly crenulate; apex subtruncate, slightly emarginate, with angles scarcely advanced; posterior angles broadly rounded, each marked by a slight, blunt tooth; disc with usual impressed lines, with longitudinal group of punctures on each side behind middle slightly nearer side than middle, and with a little very fine, sparse, inconspicuous punctulation elsewhere. *Elytra* slightly wider than prothorax (E/P 1.20 and 1.17), normally formed; humeri prominent but rounded; each elytron with three striae free at base; striae entire at apex (except on final declivity), well impressed, punctate or punctulate; intervals convex, 3rd 4-punctate on outer edge; 8th carinate at base; surface of intervals not distinctly punctulate. *Inner wings* fully developed. *Lower surface:* proepisterna rugulose but not punctate; sides of abdomen shagreened but not distinctly punctate; last ventral segment lightly shagreened (with close isodiametric microsculpture) but not punctate, with two apical setae on each side wide apart. *Legs:* front femur stout (fig. 39); front tibiae strongly 3-dentate, with 4th (upper) tooth weakly developed; middle tibiae (fig. 35) with spur about as long as tibial width on outer side at or above ¼ from apex. *Measurements* (of types): length 6.3-6.9; width 1.7-1.9 mm.

Types. Holotype ♀ (M.C.Z. No. 30,168) and 4 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington), taken in wet places.

Other material. **Papua**: 1, Upper Fly R., Oroville, Aug. 10-12, 1936 (Archbold Exped., A. M. N. H.); 2, Kiunga, Fly R., Sept. 24-25, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington); 12, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 1, Hollandia, May 1945 (Hoogstraal, M.C.Z.); 1, Hollandia area, W. Sentani, Cyclops Mts., 150-250 m. (*c.* 500-800 ft.), June 25, 1959 (T. C. Maa, Bishop Mus.) in M. V. light trap. Also 3, Cape Gloucester, **New Britain**, Jan.-Feb. 1944 (Darlington).

Measured specimens. The ♀ holotype and 1 ♀ paratype.

Notes. Distinguishing characters of *inopaca* are given in the key to *Clivina* of New Guinea. The species is similar to some Australian species of the *australasiae* group and does itself occur in **Australia** (Cape York Peninsula) but does not seem to have been described there. It is also similar to *csikii* (above) but is larger, relatively broader, and less convex.

The Aitape specimens vary so much that I tried to separate some of them as different species characterized by more convex form, shallower notches between clypeal wings and preocular lobes, and more coarsely punctate elytral striae, but these characters failed to hold even in the series from Aitape. Proportions and measurements of specimens from Aitape (H/P .72 and .71; prothoracic W/L 1.02 and 1.00 and B/A 1.38 and 1.37; and E/P 1.14 and 1.17; length 5.5-7.3, width 1.5-2.0 mm.) are not significantly different from those of the types.

This species lives in damp ground in swamps and by standing water.

Clivina brandti n. sp.

Description. Form and convexity about average; black or reddish piceous, suture not or not much paler, appendages browner; moderately shining, reticulate microsculpture faint or absent above except at sides and base of pronotum and sides and apex of elytra. *Head* .70 and .72 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with sides of neck; antennae normal, intermediate segments about as wide as long; mandibles short; labrum 7-setose; clypeus subtruncate, usually broadly (sometimes slightly irregularly) emarginate, middle part not separated from wings; wings not or not much advanced, separated from preocular lobes by notches; clypeal suture indistinct (at most indicated by rather poorly defined transverse impression); supraocular convexities

separated from preocular lobes by well defined impressions; frontal sulci long, straight and parallel between eyes, sinuous anteriorly; front irregularly but usually distinctly and somewhat longitudinally impressed, with some coarse punctures at middle and finer scattered punctures (but somewhat variable in punctation); neck constriction moderate, rather coarsely punctate, usually not interrupted at middle. *Prothorax* slightly longer than wide (L/W 1.03 and 1.04), moderately narrowed anteriorly, slightly so posteriorly (base/apex 1.38 and 1.32); sides nearly straight for much of length except subsinuate before middle; apex subtruncate or slightly emarginate; posterior angles very obtuse, bluntly denticulate; disc with usual impressed lines, punctulate, with line of coarser confluent punctures each side near base. *Elytra* slightly wider than prothorax (E/P 1.08 and 1.12); humeri prominent but rounded; each elytron with 3 striae free at base; striae entire (except normally abbreviated at apex), well impressed, punctulate; intervals convex, finely and inconspicuously punctulate, 3rd 4-punctate on outer edge, 8th long-carinate at base. *Inner wings* fully developed. *Lower surface:* proepisterna microreticulate, longitudinally rugose internally, but hardly punctate; abdomen microreticulate but not punctate or at most with last segment faintly subpunctate; last ventral with 2 apical setae on each side wide apart. *Legs:* front femora moderately stout; front tibiae strongly 4-dentate but upper tooth of course small; front trochanters more or less acute and prominent at apex; middle tibiae (fig. 37) with spurs about ¼ from apex longer than tibial width. *Measurements:* length 6.5-7.0; width 1.7-1.9 mm.

Types. Holotype (sex not determined) (Bishop Mus.) and 29 paratypes from Kiunga, Fly R., **Papua**, various dates in July, Aug., Sept., and Oct., 1957 (W. W. Brandt). Some paratypes now in M.C.Z. (No. 30,308).

Other material. With the types of *brandti* at Kiunga, Brandt collected also 3 specimens with sides and apex of abdomen punctate (*sansapor*), 3 with (partly decomposed) reticulate microsculpture on disc of elytra (*szekéssyi*), and 2 larger, smoother individuals without discal microsculpture (*inopaca*). Whether these actually represent different species or whether they are extreme variations of one species I cannot be sure—this is one of those difficult cases in which a taxonomist can only make a tentative classification and hope that more material will solve the problem. In the meantime I have listed the specimens in

question under the species indicated.

Measured specimens. The holotype and 1 paratype.

Notes. Although this species clearly falls in the *australasiae* group of *Clivina* (see couplet 14 of key to species of genus), the rather strong punctation of head and unusually long spur of middle tibia suggest a possible relationship with *puncticeps* too.

Clivina székessyi Kult

Kult 1951, Acta Soc. Ent. Czechoslovakia **48**, p. 30.

Description (of type). About average for genus in form and convexity; nearly black, suture (anteriorly) and edges of elytra slightly reddish, and head and pronotum not quite black (slightly reddish) in strong light, appendages reddish brown; front shining, not distinctly microreticulate, discs of pronotum and elytra entirely microreticulate or at least covered with rather close-set minute impressed lines probably representing slightly decomposed microreticulation. *Head* .70 width prothorax; eyes moderately large and prominent, genae short, forming *c.* right angles with sides of neck; antennae normal, median segments about as wide as long (or just longer than wide); mandibles short; labrum 7-setose; clypeus very broadly emarginate, wings not separated from median part and not advanced but separated from preocular lobes by nearly rectangular notches; preocular lobes with outer edges oblique for much of length; clypeal suture indistinct; preocular lobes separated from supraocular convexities by well defined impressions; frontal sulci parallel posteriorly, sinuous anteriorly; front slightly irregular, subfoveate at middle, irregularly punctulate; neck impression moderate, punctate at sides, rather narrowly interrupted at middle. *Prothorax:* width/length .99; base/apex 1.42; sides faintly sinuate before middle, slightly and sparsely crenulate; apex subtruncate (broadly emarginate); posterior angles broadly rounded, subdentate; disc with usual impressed lines, with some transverse strigulation, not distinctly punctate but with impressed line each side before base. *Elytra* slightly wider than prothorax (E/P 1.14), normally formed; humeri broadly rounded but prominent; each elytron with 3 striae free at base; striae well impressed, virtually entire, finely punctate; intervals somewhat convex, 3rd with 4 moderately distinct dorsal punctures on outer edge, 8th carinate at base, surface of intervals with microsculpture as described but not otherwise punctate.

Inner wings fully developed. *Lower surface:* proepisterna microreticulate externally, rather lightly punctate or rugulose internally; ventral segments microreticulate but not punctate; last ventral with 2 setae each side wide apart. *Legs:* front femora moderately stout, with lower edges slightly arcuate but not strongly lobed; front tibiae strongly 3-dentate externally with 4th (upper) tooth indicated as a rectangular projection; middle tibia with spur longer than tibial width and about ¼ from apex. *Measurements:* length 7.0; width 2.0 mm. (almost exact).

Types. Holotype ♀ (Hungarian National Mus.) from Simbang, Huon Gulf, **N-E. N. G.**, 1899 (Biró); and 1 ♀ paratype (Kult collection) from Fenichel (also apparently collected by Biró in New Guinea, but I have not found the locality).

Measured specimen. The holotype.

Occurrence in New Guinea. I tentatively assign here the following specimens. **Neth. N. G.**: 1, Hollandia, July-Sept. 1944 (Darlington); 7, same locality, Apr., May, and June 1945 (Malkin, U.S.N.M.); 1, same locality, May 1945 (Hoogstraal, M.C.Z.); 2, Waris, S. of Hollandia, 450-500 m. (*c.* 1450-1625 ft.), Aug. 1-2, 1959 (T. C. Maa, Bishop Mus.); 3, Sabron, Cyclops Mts., 930 and 1,200 ft., May and June 1936 (Cheesman). **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington); 1, Torricelli Mts., Siaute, sea level, Sept. 9-17, 1958 (W. W. Brandt, Bishop Mus.). **Papua**: 35, Dobodura, Mar.-July 1944 (Darlington); 3, Kiunga, Fly R., July 11-14, 26-30, Aug. 1-3, 1957 (W. W. Brandt, Bishop Mus.).

Notes. The specimens listed above vary somewhat in color (black or brown) and other minor characters, but I cannot distinguish more than one species. Most of the Dobodura specimens were taken in shady, grassy ground by standing water. I am indebted to Dr. Z. Kaszab for an opportunity of examining the type of this species.

Clivina netolitzkyi Kult

Kult 1951, Acta Soc. Ent. Czechoslovakia **48**, p. 30.

Description. Kult indicates that this species has the same characters as the preceding one except color brownish with 1 external interval of each elytron piceous and antennae and legs reddish; elytra with striae less distinctly punctate, intervals less convex, 3rd with 4 dorsal punctures more distinct; and front tibia with upper tooth indistinct. Length 6.9 mm.

Type. Holotype ♂ (Kult collection) from Erima, Astrolabe Bay, **N-E. N. G.**

Notes. I cannot judge, from the description, whether or not this species is really distinct from the preceding one.

(Subfam. MORMOLYCINAE)
(Tribe MORMOLYCINI)
(Genus MORMOLYCE Hagenbach)

Hagenbach 1825, Mormolyce Novum Coleopterorum Genus, p. 3.
Rousseau 1906, *in* Wytsman, Genera Insectorum, Fasc. 40, p. 3.
Csiki 1928, Coleop. Cat., Carabidae, Mormolycinae, p. 1.
Andrewes 1930, Cat. Indian Carabidae, p. 222 (see for additional references).
—— 1941, Ann. Mag. Nat. Hist. (11) **7**, p. 315.

Notes. This genus of 5 or 6 species of very large, extraordinarily flattened and expanded Carabidae occurs in the Malay Peninsula and (southern?) Thailand, and Sumatra, Java, and Borneo. It has been doubtfully recorded from New Guinea by Rousseau on the authority of Ritsema, but the record is presumably an error.

Subfam. HARPALINAE
(Tribe APOTOMINI)
(Genus APOTOMUS Illiger)

Illiger 1807, Magazin für Insektenkunde **6**, p. 348.
Csiki 1928, Coleop. Cat., Carabidae, Harpalinae **1**, p. 5 (see for additional references).
Andrewes 1930, Cat. Indian Carabidae, p. 32.
—— 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 29.
Jeannel 1946, Coléop. Carabique de la Région Malgache, Part 1, p. 316.

Diagnosis. See Andrewes' key to tribes (1935, pp. 1 ff.); *Apotomus* is the only genus of its tribe. The species are small (usually 3 to 4 mm.), black or brown, pubescent, with peduncular prothorax and fully developed inner wings.

Description. See Andrewes (1935).

Genotype. Scarites rufus Rossi (Mediterranean region).

Generic distribution. The Mediterranean region, parts of Africa, Madagascar, tropical Asia and islands to Celebes and Philippines, and Australia, but perhaps not New Guinea.

(Apotomus atripennis Motschulsky)

Motschulsky 1858, Étude Ent. **7**, p. 22.

Andrewes 1935, Fauna British India etc., Coleop. Carabidae **2**, p. 30 (see for synonymy and additional references).

Description. None needed here; see Andrewes (*loc. cit.*).

Type. From near Colombo, Ceylon; in Moscow University Mus. (*t.* Andrewes).

Occurrence in New Guinea. Doubtful.

Notes. A. atripennis is widely distributed in tropical Asia and extends east to Celebes and the Philippines. It has been recorded from New Guinea, but I doubt its occurrence there: the only supposedly New Guinean specimens that I have seen are from Wallace's dubious "Dorey" collections (see p. 331). In Luzon, this species occurs in open, grassy country, on or in the surface of the ground. It is sometimes common in flood debris and at light.

Tribe BEMBIDIINI

Csiki 1928, Coleop. Cat., Carabidae, Harpalinae **1**, p. 27 (see for synonyms and additional references).

Sloane 1921, Proc. Linn. Soc. New South Wales **46**, p. 192 (Australian genera).

Andrewes 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 80.

Bembidiitae Auct. incl. Jeannel 1946, Coléop. Carabiques de la Région Malgache, Part 1, p. 331.

This is a large tribe of small Carabidae most (but not all) of which live on the surface of the ground, often (but not always) by water or in wet places. Most are nocturnal and hide by day under vegetation or in ground litter or in loose soil or sand, but a few species live on tree trunks or are arboreal, and a few live deep in the soil, and a few are diurnal rather than nocturnal. For some reason, very few species of this tribe occur in caves, although many Trechini do so.

The two principal genera of the tribe are both almost world-wide in distribution, but they are complementary in their main areas of abundance. *Bembidion* is dominant in cool northern regions, with comparatively few species scattered in the tropics and the southern hemisphere. *Tachys* is dominant in the tropics and some south-temperate regions, with comparatively few species in the cool north. (It should be added that some specialists, including Jeannel, split both these old genera into many smaller ones.)

Key to Genera of Bembidiini of New Guinea

1. Scutellar striae present; front tibiae with apices normal (irregularly rounded); length (in New Guinea) *c.* 4 mm. (p. 399) . . *Bembidion*
— Scutellar striae absent; front tibiae with outer apical angles obliquely truncate-emarginate; length (in New Guinea) less than 4 mm. 2
2. Upper surface glabrous except for fixed setae (in New Guinean species); apical recurved striole of elytron usually (not always) well developed (p. 340) . . . . . *Tachys*
— Upper surface with short pubescence; apical strioles absent or rudimentary (p. 484) . . . . . *Limnastis*

Genus BEMBIDION Latreille

Latreille 1802, Hist. Nat. Crustacés et Insectes **3**, p. 82.
Sloane 1921, Proc. Linn. Soc. New South Wales **46**, p. 193 (the Australian species).
Csiki 1928, Coleop. Cat., Carabidae, Harpalinae **1**, p. 32 (see for synonyms and additional references).
Andrewes 1930, Cat. Indian Carabidae, p. 38.
—— 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 92.
Darlington 1960, Pacific Insects **1**, pp. 332 ff.

Diagnosis. See key (above), and Andrewes 1935.

Description. See Andrewes 1935.

Genotype. Cicindela quadrimaculata Linnaeus (Holarctic).

Generic distribution. See under tribe Bembidiini, above. A few Asiatic stocks of *Bembidion* reach Sumatra, Java, Borneo, Celebes, and the Philippines (Darlington 1960), some at low altitudes and others on mountains, and several species of the genus occur in (chiefly southern) Australia; in fact one Asiatic species, *B. sobrinum,* is represented in Australia. But only one species of the genus has been found in New Guinea, and it belongs to the specialized, coastal subgenus *Cillenus* (see notes under the following species). The apparent absence of *Bembidion* on the mountains of New Guinea (together with other evidence) suggests that these mountains have *not* been part of a route by which temperate Carabidae have dispersed between Asia and Australia.

BEMBIDION (CILLENUS) ALBERTISI Putzeys

Putzeys 1875, Ann. Mus. Civ. Genova (Genoa) **7**, p. 748.
Andrewes 1938, Proc. R. Ent. Soc. London (B) **7**, p. 192.
Darlington 1953, Coleopterists' Bull. **7**, p. 16.

Description. Rather narrow, subdepressed, dull (greenish?) black, each elytron with a small post-humeral ferrugineous spot; length 4 mm.; see Andrewes for further details.

Type. From Sorong, **Neth. N. G.**, in Genoa Civic Mus. (*t.* Andrewes); I have not seen it.

Occurrence in New Guinea. Known only from the type.

Notes. The subgenus (or genus) *Cillenus* includes a moderate number of species scattered from Europe and Japan to Australia and New Zealand. Most occur on the sea coast, in the inter-tidal zone. The habits of *albertisi* are unknown, but a related species (*alatum* Darl.), on Morotai Is. in the Moluccas, was found in gravel bars beside running fresh water near the sea.

Genus TACHYS Stephens

Stephens 1828, Illustrations of British Ent., Mandibulata **2**, pp. 2, 4.
Sloane, 1921, Proc. Linn. Soc. New South Wales **46**, pp. 194 ff.
Csiki 1928, Coleop. Cat., Carabidae, Harpalinae **1**, p. 165 (see for synonymy and additional references).
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 327 ff.
—— 1930, Cat. Indian Carabidae, p. 323.
—— 1935, Fauna British India etc., Coleop. Carabidae **2**, p. 206.
Jeannel 1946, Coléop. Carabique de la Région Malgache, Part 1, p. 334.

Diagnosis. See key (above), and Andrewes 1935.

Description. See Andrewes 1935. Technical characters of *Tachys* are: size small, palpi subulate (that is with last segment reduced to vestige; this character separates *Tachys* etc. from all other more or less similar small Carabidae in New Guinea); outer angle front tibia obliquely truncate-emarginate; scutellar strioles absent; apical recurved strioles of elytra usually (not always) present; and (in New Guinean species) dorsal pubescence (excepting fixed tactile setae) absent. Other characters, perhaps less important for practical purposes, include mandibles short, curved, without setae in scrobes; 2 supraocular and 2 lateral prothoracic setae present on each side (in all New Guinean species); wings usually fully developed, but reduced or dimorphic in a few species (see *scrrula* subspecies *inales,* and the species *ambulatus*, *avius,* and *brachys* in the following pages); dorsal reticulate microsculpture present or absent, when present usually isodiametric on head, transverse on pronotum and elytra; lower surface usually with prosternum more or less impressed longitudinally and metasternum usually (not always)

variably margined anteriorly between middle coxae (see Andrewes 1925, p. 335); ♂ anterior tarsi dilated or not dilated, if dilated with 2 segments of each tarsus widened (only 1 segment widened in some Oriental species), the widened segments biseriately squamulose below; and ♂ with 1, ♀ 2 setae each side last ventral segment, the position of the inner setae in ♀ differing in different groups.

Genotype. Tachys scutellaris Stephens (Europe).

Generic distribution. Almost world-wide (see under tribe Bembidiini, above).

Notes. There are good structural characters by which *Tachys* can be divided into subgenera or genera (whichever are more useful) and some authors, including Jeannel, have divided it. This is probably the right course in the end, but I am not ready to follow it with the New Guinean species. The *Tachys* of New Guinea ought to be classified on the same system as those of adjacent areas. Classifications have been made of the *Tachys* of Australia (Sloane 1921) and the Orient (Andrewes 1925). However, these two classifications are very different and not easily reconciled with each other. I have chosen to follow Andrewes' system because it is more comprehensive than Sloane's and because most New Guinean species fit into it well. Some species of *Tachys* are very wide-ranging (see following paragraph). This suggests that *Tachys*, or at least some *Tachys*, have dispersed comparatively recently. Most species of the genus are fully winged, and their small size probably makes them especially liable to wind dispersal. They are sometimes carried by man: I have before me 3 widely distributed Oriental-New Guinean species intercepted in plant material shipped to the United States (see under *T. truncatus, ceylanicus,* and *fumicatus,* below).

I recognize 63 full species of *Tachys* in New Guinea (a few others are of doubtful occurrence) belonging to 10 species-groups, of which the distribution is outlined as follows. The *fasciatus* and *politus* groups are more or less world-wide, and each includes very wide-ranging species as well as many more-localized ones: *T. fasciatus* apparently occurs throughout the whole warmer part of the Old World, and *T. ceylanicus* (*politus* group) extends from tropical Asia at least to New Guinea. Both these groups include subgroups that seem to be in process of speciation on New Guinea. The species of these groups occur as a rule on the ground in a variety of wet places, although an

occasional species has entered some special habitat: *e.g. T. aeneus* (*politus* group) occurs in rather dry places away from water. The *quadrillum* group is probably nearly world-wide in distribution but lives especially in coastal or saline habitats although some species occur elsewhere. The species of this group are few but often wide-ranging. Two of them apparently extend from southern Asia to New Guinea or Australia. The *nanus* group is probably nearly world-wide too, in a different special habitat, on or under the bark of trees, although one very distinct New Guinean species (*wallacei*) has invaded the lower foliage of rain forest. Some species of this group too are wide-ranging: *e.g. umbrosus* extends from southern Asia to New Guinea and has apparent close relatives in temperate Eurasia and North America and in eastern Australia. The *fumicatus* group may consist of only three species (unless additional ones occur in Africa), but *fumicatus* itself extends from Africa to Japan to New Guinea, and the other two (probably closely related) species are in Europe and Australia. The *haliploides* group occurs at least from Europe to Australia; the single species that surely occurs in New Guinea (*latissimus*) apparently ranges from southern Asia to Australia. The *truncatus* group is another widely distributed one. It consists of a few, small species, some widely distributed (*truncatus* extends from southern Asia to New Guinea and has apparent close relatives in Europe and Australia), some apparently localized. In contrast to the preceding ones, the *serra* group, of three distinct species plus additional subspecies, is almost confined to New Guinea, extending only (so far as known) to the Moluccas and New Britain (not Australia); it has probably evolved on New Guinea from an Oriental ancestor. The *acaroides* group consists of a few obscure species, too little known to be significant. Finally, the *singularis* group, also very poorly known, presents an extraordinary geographical problem. *T. singularis* is described from Celebes. The only other known species of the group, *yunax,* occurs in New Guinea and the *West* Indies (see p. 482). In summary, I should say that the geographical relationships of New Guinean *Tachys* are complex, but are more Oriental than Australian. New Guinea and Australia do share some species, and a few of these may be Australian in origin, but most of them seem to be Oriental species or members of Oriental groups that have reached New Guinea from Asia rather recently and have continued to Australia. There are a number of very peculiar species or species-groups

of *Tachys* in Australia that are not represented in New Guinea.

Collecting *Tachys* is a task for specialists. Even good general collectors, like Toxopeus and Miss Cheesman, get few of them. Biró, however, did get a long series of one obscure species as well as a few specimens of other species, probably by sifting. Different species of *Tachys* have to be looked for laboriously in a great variety of habitats: by "treading" in many different sorts of fresh and saline wet places (and a few occur in dry places, too), by washing the banks of large and small streams and of pools and ponds, in and out of shade, and by "drowning" or sifting various sorts of debris, loose soil, and leaf litter especially from damp places including rain forest; and additional species occur on fallen logs and under bark in rain forest, perhaps on fungi, or (*Tachys wallacei*) on low foliage or moss-like epiphytes in rain forest. A few hours collecting *Tachys* along the edge of a good flood, *as it rises or soon afterward*, is likely to be worth days of ordinary collecting, although the exact habitats of flood-collected specimens are often doubtful; and some *Tachys* fly to light.

Key to Groups of Tachys of New Guinea

1. Mentum with 2 conspicuous foveae at base (except in minute *truncatus*, p. 431) 2
— Mentum without conspicuous foveae 5
2. Apical elytral striole lacking or, if present, not extending forward as far as posterior dorsal elytral puncture (p. 430) ..... *truncatus* group
— Apical striole present, the posterior elytral puncture on or behind its hooked anterior end 3
3. Elytral margins strongly serrate behind humeri; striation of elytra entire or nearly so (p. 404) ..... *serra* group
— Elytral margins not serrate (in New Guinean species); striation usually reduced 4
4. Posterior dorsal puncture of elytron inside apical striole behind (not attached to) its hooked tip (fig. 40); anterior dorsal puncture usually outside 3rd stria (p. 410) ..... *fasciatus* group
— Posterior dorsal puncture of elytron attached to hooked tip of apical striole (fig. 41); anterior puncture on (position of) 3rd stria (and farther back than in *fasciatus* group) (p. 427) ..... *quadrillum* group
5. Anterior part of apical striole about half way between suture and margin of elytron; elytral margin not distinctly setulose or serrate 6
— Apical striole close to margin, or obsolete; elytral margin setulose or serrate 8
6. Elytron with 2 dorsal punctures 7
— Elytron with 1 dorsal puncture; (basal sulcus of pronotum with 2

foveae at middle; claws denticulate; form very compact and convex) (p. 473) ..... *haliploides* group

7. Frontal foveae not extending onto clypeus; labrum truncate or moderately emarginate (p. 435) ..... *politus* (incl. *exaratus*) group

— Frontal foveae long, linear, deep, converging anteriorly, extending onto and nearly meeting on clypeus; labrum semi-circularly emarginate (p. 468) ..... *fumicatus* group

8. Apical striole close to margin of elytron; stria 8 present 9

— Apical striole and stria 8 obsolete (p. 472) ..... *acaroides* group

9. Elytral margins setulose but not strongly serrate (p. 476) ..... *nanus* group

— Elytral margins strongly serrate (p. 481) ..... *singularis* group

Tachys serra Group

Tachys serra and its relatives do not fit any of Andrewes' groups of Oriental *Tachys*. In Andrewes' key (1925, pp. 336 ff.) they fall between the *recurvicollis* and *triangularis* (=*fasciatus*) groups, combining (with conspicuous pores on the mentum) antennal segments 2 and 3 subequal with elytral margins strongly serrate, and they differ from both groups in having stria 8 of the elytra deeply impressed for its whole length. However they resemble *T. delicatus* Andrewes, of Singapore, in having the elytra almost fully striate (but stria 8 is obsolete in front in *delicatus*), in position of dorsal punctures of elytra, in serration of elytral margins, and in some other ways. The *serra* group may therefore be derived from a *delicatus*-like, presumably Oriental member of the *fasciatus* group. The *serra* group consists of 3 full species, which occur together in eastern New Guinea (at Dobodura), and several distinct geographical forms in other parts of New Guinea which I am calling subspecies to emphasize their relationships. Outside New Guinea, the group is represented by a relative of *serra* on Morotai Island in the Moluccas, and *serrula* extends to New Britain. The group is not represented in Australia and has no close relatives there. The species of the group are much alike in structure and differ chiefly in size, proportions, and shape of prothorax. I shall therefore describe only one species (*serra*) in detail, and shall compare the other species with it. All the species are found in debris, loose soil, etc. on the ground in damp places in rain forest. They are not primarily associated with open water but sometimes occur in rotten stumps etc. standing in water in swampy places.

Key to New Guinean Species of Tachys of serra Group

1. Broad, prothoracic width/length *c.* 1.39–1.57; large, length 3.0–3.6 (rarely only 2.8) mm. ..... *serra*
   (1a) Base of prothorax relatively narrow (base of prothorax/width of head *c.* 1.40–1.45), and sides of prothorax broadly and rather strongly sinuate before base (p. 405) *serra sensu stricto*
   (1b) Base of prothorax very broad (base of prothorax/width of head *c.* 1.70–1.80), and sides of prothorax broadly but less strongly sinuate (p. 407) ..... (subsp. *latiserra*)
   (1c) Base of prothorax/width of head *c.* 1.51–1.53; sides of prothorax briefly sinuate near base (p. 407) .... (subsp. *breviserra*)

— More slender and/or smaller 2

2. Relatively slender, prothoracic width/length *c.* 1.35-1.37, base of prothorax/width of head *c.* 1.26–1.31; length 2.5–2.7 mm. (p. 408) *tenuiserra*

— Less slender but much smaller; prothoracic width/length *c.* 1.37–1.46; length 1.9–2.4 mm. ..... *serrula*
   (–a) Base of prothorax wider (base of prothorax/width of head *c.* 1.39-1.40); inner wings fully developed (p. 408) ..... *serrula sensu stricto*
   (–b) Base of prothorax narrower (base of prothorax/width of head *c.* 1.31–1.33); inner wings reduced (p. 409) .... (subsp. *inales*

Tachys serra n. sp.

Description. Form of *fasciatus* group but more convex than usual; brown (or reddish or castaneous), appendages paler; slightly iridescent; microsculpture distinct and isodiametric or slightly transverse on head, absent or faint (transverse where visible) on disc of pronotum, absent or faint (sometimes faint indications of very fine transverse lines) on elytra. *Head* rather small, .62, .61, and .59 width prothorax; eyes rather small (compared to *fasciatus*) but convex, with genae behind them short, oblique; antennae normal, segments 2 and 3 subequal, median segments almost 3X long as wide; frontal grooves normal, irregularly subparallel; mentum toothed, with 2 conspicuous pores at base. *Prothorax* transverse-subcordate; width/length 1.39, 1.40, and 1.43; base somewhat narrower than widest part but much wider than apex, base/apex 1.40, 1.40, and 1.41, width of base/width of head 1.40, 1.44, and 1.45; sides rather strongly rounded anteriorly, broadly and rather strongly sinuate before base; apex broadly emarginate; base almost subtruncate (actually broadly but slightly lobed at middle, trending slightly backward at sides); anterior angles rounded; posterior angles acute,

not carinate; lateral margins rather narrow anteriorly, merging with disc posteriorly but not elevated posteriorly, not forming baso-lateral foveae (in *fasciatus* etc. the prothoracic margins are more elevated posteriorly so that rather vague baso-lateral foveae are formed); disc with anterior transverse impression almost obsolete, median line distinct, basal transverse sulcus deep, punctate but without special median foveae. *Elytra* broad, width elytra/width prothorax 1.39, 1.37, and 1.34; humeri prominent, almost (obtusely) angulate; basal margin ending opposite or inside of end of 4th stria; margin conspicuously dentate at and behind humeri, the dentations becoming less conspicuous posteriorly; striation entire (except most striae more or less abbreviated at base and apex); striae punctulate; 8th entire, deep anteriorly, deep and sinuous posteriorly, less deep but still well impressed at middle; apical striole deep, hooked anteriorly between ends 3rd and 4th discal striae; intervals slightly convex, with a few faint, scattered punctules; anterior dorsal puncture on inner edge 5th interval (just outside 4th stria) about ¼ from base, posterior puncture inside apical striole just behind hook. *Inner wings* fully developed. *Lower surface:* prosternum longitudinally impressed; metasternum narrowly margined anteriorly (between middle coxae); lower surface mostly impunctate, not pubescent (except last ventral segment of ♀). *Legs* normal, claws simple. *Secondary sexual characters* normal; ♂ with 2 segments each front tarsus very widely dilated (much wider than in *fasciatus*); ♂ with 1, ♀ 2 setae each side last ventral, the inner pair in ♀ far forward (distant from margin); and ♀ with traces of pubescence on last ventral segment so short, sparse, and inconspicuous that it is easily overlooked even at 100X. *Measurements:* length *c.* 3.2-3.6; width *c.* 1.5-1.7 mm.

Types. Holotype ♂ (M.C.Z. No 30,169) and 14 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington); and 1 additional ♂ paratype from Oro Bay (near Dobodura), Dec. 1943-Jan. 1944 (Darlington); and 1, Brown R., **Papua**, May 25, 1956 (E. J. Ford Jr., Bishop Mus.).

Measured specimens. The ♂ holotype and 2 (♂ ♀) paratypes from Dobodura.

Notes. This very distinct new species represents a new subgroup of *Tachys* characteristic of New Guinea and some adjacent islands. Its relationships to other *Tachys* are discussed above and indicated in preceding keys.

Tachys serra latiserra n. subsp.

Description. Generally similar to typical *serra* but differing in form (fig. 42) and proportions, especially in relatively wider base and less sinuate sides of prothorax. *Head* .55, .56, .56, and .55 width prothorax. *Prothorax:* width/length 1.57, 1.56, 1.52, and 1.57; base/apex 1.63, 1.58, 1.63, 1.63; base of prothorax/-width of head 1.80, 1.70, 1.74, 1.75. *Elytra:* width elytra/width prothorax 1.33,, 1.31, 1.33, 1.35. *Measurements:* length 2.8-3.4; width 1.3-1.5 mm.

Types. Holotype ♂ (M.C.Z. No. 30,170) and 28 paratypes all from Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington).

Other material. Sixteen, Hollandia, **Neth. N. G.** July-Sept. 1944 (Darlington); 1, same locality, Nov. 1944 (H. Hoogstraal, M.C.Z.); 6, Aitape, **N-E. N. G.**, Aug. 1944(Darlington). These localities are all in the central part of the north coast of New Guinea. I have also before me one specimen from Madang ("Friedrich-Wilh.-hafen," 1896, Biró, Hungarian National Mus.) intermediate both geographically and structurally between *serra* and *latiserra*. Width of base of prothorax/width of head of this specimen is 1.58.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Maffin Bay, 1 ♂ from Hollandia, and 1 ♂ from Aitape; proportions listed in this order in each case.

Notes. See key and preceding description.

Tachys serra breviserra n. subsp.

Description. Generally similar to typical *serra* and subspecies *latiserra*, but differing in form and proportions especially of prothorax. *Head* .58 and .59 width prothorax. *Prothorax:* width/length 1.53 and 1.54; base/apex 1.45 and 1.47; width of base/width of head 1.53 and 1.51; sides rounded almost to base then briefly sinuate just before basal angles. *Elytra:* width elytra/width prothorax 1.29 and 1.28. *Measurements:* length 3.0-3.3; width 1.2-1.3 mm.

Types. Holotype ♂ (M.C.Z. No. 30,171) and 2 (♂ ♀) paratypes all from Sansapor, Vogelkop, **Neth. N. G.**, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and ♀ paratype.

Notes. See key to species of *serra* group.

Tachys tenuiserra n. sp.

Description. Generally similar to *serra* but smaller and more slender (fig. 43); color, faint iridescence, and microsculpture similar. *Head* .64 and .66 width prothorax; details as described for *serra*. *Prothorax* more narrowly subcordate and with relatively narrower base; width/length 1.37 and 1.35; base/apex 1.29 and 1.24; width of base/width of head 1.31 and 1.26; sides arcuate anteriorly, broadly and strongly sinuate before acute posterior angles; other details as described for *serra*. *Elytra:* width elytra/width porthorax 1.40 and 1.49; other details as in *serra*. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* as in *serra*. *Measurements:* length 2.5-2.7; width 1.0-1.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,172) and 28 paratypes all from Dobodura, Papua, Mar.-July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Under the microscope, *serra* and the present species are perfectly distinct, but I did not distinguish them in the field and cannot say whether they occur in exactly the same habitats.

Tachys serrula n. sp.

Description. Form of *serra* group (or convex *fasciatus* group); rufous, head (slightly) and elytral discs (more obviously) usually darker, appendages testaceous; microsculpture light and somewhat transverse on head, not distinct on pronotum and elytra, although slight opalescent iridescence suggests unresolved microsculpture. *Head* small, .61 and .63 width prothorax; eyes rather small, somewhat variable in size and convexity; genae oblique or convex in profile; antennae normal, segments 2 and 3 subequal, median segments about 2X long as wide; frontal grooves irregularly subparallel; mentum toothed, with 2 conspicuous pores at base. *Prothorax* transverse-subcordate; width/length 1.46 and 1.46; moderately narrowed in front and behind; base/apex 1.26 and 1.30; width of base/width of head 1.39 and 1.40; sides arcuate in about anterior ¾, sinuate posteriorly; apex broadly emarginate, base subtruncate (modified as usual in group); anterior angles rounded, posterior angles *c.* right, sharp, not carinate; lateral margins narrow, scarcely wider basally; no distinct baso-lateral foveae; disc with anterior transverse line obsolete, median line distinct, basal sulcus deep, irregular or slightly punctulate but without special median foveae.

Elytra rather broad; width elytra/width prothorax 1.34 and 1.39; humeri prominent but rounded; basal margin ending opposite or inside base of 4th stria; margin conspicuously dentate at and behind humeri; striation entire (except most striae abbreviated anteriorly and posteriorly as usual); striae 1 to 7 lightly impressed or represented by rows of moderate punctures; stria 8 deep and entire; apical striole as in *serra;* intervals nearly flat; anterior dorsal puncture on 4th stria at or behind anterior ¼, posterior puncture inside apical striole behind hook. *Inner wings* fully developed in all specimens. *Lower surface* with slight pubescence on last ventral segment. *Legs* normal. *Secondary sexual characters* as in *serra. Measurements:* length 2.0-2.4; width 0.8-1.0 mm.

Types. Holotype ♂ (Hungarian National Mus.) and 150 paratypes (some in M.C.Z., Type No. 30,173) from Madang ("Friedrich-Wilh.-hafen"), **N-E. N. G.**, 1901 (Biró). These specimens were probably taken by sifting, but there is no indication of the habitat.

Other material. **N-E. N. G.**: 48, Stephansort, Astrolabe Bay, 1898 (Biró); 12, Erima, Astrolabe Bay, 1896 (Biró); 4, Hanseman, Astrolabe Bay, 1901 (Biró). **Papua**: 1, Karema, Brown R., Mar. 8-11, 1955 (E. O. Wilson, M.C.Z.), taken in lowland rainforest. Also 7, Cape Gloucester, **New Britain**, Jan.-Feb. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Madang.

Notes. See key to species of *serra* group.

Tachys serrula inales n. subsp.

Description. Similar to typical *serrula* but differing in proportions and in atrophy of wings. *Head* .62 and .65 width prothorax. *Prothorax:* width/length 1.41 and 1.37; base/apex 1.23 and 1.22; width of base/width of head 1.33 and 1.31; sides arcuate anteriorly and sinuate posteriorly about as in typical *serrula. Elytra:* width elytra/width prothorax 1.33 and 1.40. *Inner wings* reduced in all specimens, *c.* ½ as long as elytra. *Measurements:* length 1.9-2.3; width 0.8-0.9 mm.

Types. Holotype ♂ (M.C.Z. No. 30,174) and 10 paratypes all from Dobodura, **Papua**, Mar.-July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. I have no record whether this third, smallest species of the *serra* group occurs in exactly the same habitat as the other species at Dobodura.

Tachys fasciatus Group

The following are noteworthy characters of the *fasciatus* group of *Tachys* in New Guinea (the group is more diverse in some other parts of the world). Form somewhat variable but usually moderately broad and depressed; color variable; reticulate microsculpture variable on front of head (present or absent in different species), usually indistinct on discs of pronotum and elytra, but surface usually faintly iridescent or silky. *Head:* mentum 2-foveate, usually toothed (tooth individually variable); antennae with segment 2 usually slightly longer than 3; frontal grooves moderately impressed, subparallel between eyes, sinuous anteriorly. *Prothorax* usually transversely subcordate; apex subtruncate or broadly emarginate (sometimes vaguely lobed at middle), base usually subtruncate or with weak lobe at middle but more strongly lobed in *sublobatus;* posterior angles variable, not carinate; anterior transverse impression obsolete, middle line finely impressed, basal transverse sulcus deep but sometimes interrupted at middle, usually crenate, with or without a conspicuous fovea at middle. *Elytra* with humeri prominent but rounded (slightly narrowed in species with reduced wings); margins ending inwardly opposite bases of 4th striae, not serrate (margins are serrate in some Oriental species of group); striation variable, usually not entire; 8th stria widely interrupted at middle, the posterior part (behind the principal interruption) entire or nearly so in the larger species, fragmentary in the smaller ones; apical striole well developed, about midway between suture and lateral margin, more or less hooked at tip (anterior end); anterior dorsal puncture usually on or near 4th stria (near 3rd stria in *privus* and on 6th interval in *sericeus,* but latter may not occur in New Guinea), posterior puncture usually inside apical striole behind (not attached to) its hooked tip (fig. 40). *Inner wings* usually fully developed, but reduced in last 2 species. *Lower surface* impunctate; prosternum usually slightly longitudinally impressed; mesosternum narrowly margined anteriorly. *Secondary sexual characters:* ♂ with 2 segments each front tarsus dilated, squamulose below; ♂ with 1, ♀ 2 setae each side last ventral segment, the 2nd (inner) setae in ♀ distant from the margin; and ♀ usually with a little short, sparse, very inconspicuous pubescence on last ventral segment.

The *fasciatus* group of *Tachys* is nearly world-wide in distribution, within the geographical limits of the genus. *Tachys*

fasciatus itself occurs throughout most of the warmer part of the Old World. Apparent representative forms of *Tachys mastersi* occur in eastern Australia, New Guinea, the Moluccas, and the Philippines. The 11 other species of the group in New Guinea are endemic or extend only to the Moluccas or other islands near New Guinea, so far as is known.

Key to Species of Tachys of fasciatus Group of New Guinea

1. Anterior dorsal puncture of elytron not on or near 4th stria 2
— Anterior dorsal puncture of elytron on or near 4th stria 3
2. Anterior dorsal puncture of elytron on 6th interval (p. 412) (*sericeus*)
— Anterior dorsal puncture of elytron near (outside of) 3rd stria (p. 413) ..... *privus*
3. Basal transverse sulcus of pronotum with a distinct fovea at middle; and eyes large or moderate, genae (in profile from above) forming right or nearly right angles with neck; and elytra fasciate or maculate, not unicolorous (except in teneral specimens) 4
— Not as above in one or more ways: basal sulcus of pronotum without distinct median fovea (except individually in *mastersi* subsp.); eyes moderate or small, in latter case forming very obtuse angles with neck; elytra often unicolorous, but sometimes fasciate or maculate. 9
4. At least 6 dorsal striae indicated (outer ones sometimes very faint) on each elytron; front usually with reticulate microsculpture of entire meshes plainly visible at 50X (but faint in *apex*) 5
— Less than 6 dorsal striae indicated on each elytron; front with reticulate microsculpture faint or absent 7
5. Larger, 3.1–3.3 mm.; elytra dark in *c.* basal ⅔ with relatively small post-humeral spots (sometimes almost lacking) and large apical area pale; (3rd and 4th elytral striae almost connected at anterior dorsal puncture) (p. 414) ..... *apex*
— Smaller, 2.2–2.8 mm.; elytra fasciate or 4-maculate with anterior and posterior pale areas *c.* equal 6
6. Prothorax pale; elytral striae slightly more impressed (p. 414) ..... *fasciatus*
— Prothorax dark (as dark or darker than head); elytral striae usually slightly less impressed (p. 416) ..... *fumax*
7. Base of prothorax with broad but distinct lobe set off by strong sinuations (fig. 44) ..... *sublobatus*
   (7a) Base of prothorax slightly narrower than width of head; elytron usually with only the sutural stria well impressed; elytra usually fasciate (p. 418) ..... (*sublobatus s. s.*)
   (7b) Base of prothorax *c.* equal width of head; each elytron with 2 striae well impressed; elytra 2-maculate (dark, each elytron with a pale subapical spot) (p. 420) ..... (subsp. *suffusus*)
— Base of prothorax not abnormally lobed 8

8. Form and size of *fasciatus*, length 2.4–2.9 mm.; pronotum pale (usually paler than head) (p. 417) ..... *sibling*
— More slender and larger, 3.0–3.2 mm.; pronotum dark (or at least not paler than head) (p. 417) ..... *beatus*
9. Elytra broader, more convex, and with wider margins than usual in *fasciatus* group (fig. 45) ..... (*mastersi*)
(9a) Basal area of pronotum (behind posterior transverse sulcus) usually not rugulose; color dark castaneous, often (not always) 2 — maculate with pale (p. 421) ..... (subsp. *pinguis*)
(9b) Basal area of pronotum longitudinally rugulose; color more rufous, not maculate (p. 420) ..... (subsp. *exul*)
— Elytra normal for *fasciatus* group in shape and convexity 10
10. Eyes moderate; inner wings fully developed 11
— Eyes small, the genae forming very obtuse angles with sides of neck; wings often (not always) reduced 12
11. Male with 2 segments each front tarsus widely dilated, 2nd segment much wider than long ..... *masculus*
(11a) Elytra 4-maculate (p. 422) ..... (*masculus s. s.*)
(11b) Color nearly uniform brown or castaneous (p. 423) ..... (subsp. *filius*)
— Male with 2 segments each front tarsus moderately dilated, 2nd segment *c.* wide as long (p. 424) ..... *flavax*
12. Inner wings fully developed; elytra fasciate (p. 424) ..... *luscus*
— Inner wings usually reduced (*c.* ⅔ or ¾ long as elytra); if wings fully developed (individually in *avius*), elytra not fasciate 13
13. Sides of prothorax broadly and strongly sinuate; elytra fasciate or 4-maculate (p. 425) ..... *ambulatus*
— Sides of prothorax briefly sinuate; unicolorous (p. 426) ..... *avius*

(Tachys sericeus Motschulsky)

Motschulsky 1851, Bull. Soc. Nat. Moscou **24**, Part 2, No. 4, p. 507.

Andrewes 1935, Fauna British India, Coleop., Carabidae **2**, pp. 214, 223 (see for additional references and synonymy).

Louwerens 1953, Verhandlungen Naturforschenden Gesellschaft Basel **64**, p. 305.

Description (recognition characters only). A large *Tachys* (3.25-4.0 mm. long) of the *fasciatus* group; reddish or reddish-castaneous with head slightly darker and elytral disc nearly black; anterior dorsal puncture of elytron on 6th interval about ¼ from base.

Type. From "Ind. or."; said by Andrewes to be in Moscow University Mus.

Occurrence in New Guinea. Doubtful.

Notes. The only specimen of *sericeus* that I have seen that purports to be from New Guinea is in the British Mus. labeled "Dorey, Wallace." I have already given reasons (p. 331) for doubting that Wallace's "Dorey" specimens really came from New Guinea. Otherwise the known range of *sericeus* is from northeastern India and Burma to Sumatra, Borneo, and Sumba in the Lesser Sunda Is. The species' closest allies are Oriental.

Tachys privus n. sp.

Description. With characters of *fasciatus* group as here defined. Form average for group; reddish yellow, a transverse post-median elytral fascia slightly darker; shining, faintly iridescent or silky; head without distinct reticulate microsculpture on middle of front but traces of it laterally. *Head* .73 width prothorax, eyes moderate (smaller and less prominent than in *fasciatus*), genae forming slightly obtuse (not quite right) angles with neck; antennae rather short, middle segments about 2X long as wide. *Prothorax* transversely subcordate; width/length 1.51; base/apex 1.12; base/head 1.08; sides arcuate anteriorly, broadly and rather strongly sinuate posteriorly; base and apex subtruncate; posterior angles right and well defined; basal transverse sulcus subcrenulate, with conspicuous longitudinal pore at middle. *Elytra* about ¼ wider than prothorax (E/P 1.23), moderately elongate; 6 discal striae indicated on each elytron, inner ones moderately impressed, outer ones faint; anterior dorsal puncture outside 3rd stria about ⅓ from base. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* (of ♀) normal; last ventral segment not pubescent. *Measurements:* length *c.* 2.8; width *c.* 0.9 mm.

Type. Holotype ♀ (M.C.Z. No. 30,175) from Dobodura, Papua, Mar.-July 1944 (Darlington); unique.

Measured specimen. The type.

Notes. No other New Guinean species of the *fasciatus* group as here defined has the anterior dorsal puncture of the elytron so near the 3rd stria. In Andrewes' (1925) revision, this species would run to near *zonatus* Putzeys (of Celebes), but *privus* differs from this in a number of ways: sides of prothorax strongly sinuate (not sinuate in *zonatus*), basal sulcus with a conspicuous pore at middle (absent in *zonatus*), etc.

Tachys apex n. sp.

Description. With characters of *fasciatus* group as here defined. Form normal for group; head dark, prothorax pale, elytra dark in *c.* basal ⅔ with (usually) elongate posthumeral marks and (always) a broad apical area pale, appendages pale; moderately shining, slightly iridescent, microsculpture of head faint at middle, more distinct at sides. *Head* .79 and .79 width prothorax; eyes large and prominent; genae short, forming right angles with sides of neck; antennae with median segments *c.* 3X long as wide. *Prothorax* transversely subcordate; width/-length 1.61 and 1.56; base/apex 1.12 and 1.06; base/head 1.01 and .96; sides arcuate anteriorly, converging posteriorly to brief but rather strong basal sinuations; base and apex subtruncate; posterior angles *c.* right, well formed; basal sulcus deep, finely crenulate at sides, interrupted at middle by three elongate pores or sulci. *Elytra* about ⅓ wider than prothorax (E/P 1.31 and 1.36), rather elongate; inner striae well impressed, outer ones including 6th and 7th faint; anterior dorsal puncture about ⅓ from base between 3rd and 4th striae but nearer line of 4th (both 3rd and 4th striae bent toward and attached to the puncture on both elytra of all specimens). *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus moderately dilated; last ventral segment not pubescent. *Measurements:* length *c.* 3.1-3.3; width 1.3-1.4 mm.

Types. Holotype ♂ (M.C.Z. No. 30,176) and 4 paratypes all from Nadzab, **N-E. N. G.**, July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The large size and general appearance of the present new species suggest *Tachys sericeus* Motschulsky or *venustus* Andrewes of the Orient, but the position of the anterior dorsal puncture of the elytron indicates that the new species is in fact more related to *fasciatus* and its immediate allies.

Tachys fasciatus (Motschulsky)

Trechus fasciatus Motschulsky 1851, Bull. Soc. Nat. Moscou **24**, Part 2, No. 4, p. 506.

Tachys triangularis Nietner 1858, Ann. Mag. Nat. Hist. (3) **2**, p. 422 (*Bembidium*).

Sloane 1921, Proc. Linn. Soc. New South Wales **46**, pp. 196 (elytra), 200 (key), 207.

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 342 (key), 350, figs. 3, 14, 19, 22, 30, 34, 35, 38.

Tachys fasciatus Auct. incl. Csiki 1928, Coleop. Cat., Carabidae, Harpalinae **1**, p. 178 (see for synonymy and additional references).

Andrewes 1935, Fauna British India etc., Coleop., Carabidae **2**, pp. 213 (key), 217.

Description. None required here. See key above and notes below. Proportions: head/prothorax .72, .73, .76; prothoracic width/length 1.58, 1.60, 1.61, base/apex 1.26, 1.25, 1.16; prothoracic base/width of head 1.13, 1.14, 1.06; width elytra/prothorax *c.* 1.32, 1.38, 1.42. *Measurements:* length *c.* 2.2-2.7; width *c.* 0.8-1.1 mm.

Types. Of *fasciatus,* from "Ind. or.," in Moscow University Zool. Mus.; of *triangularis,* from Ceylon, in Berlin University Zool. Mus.; both seen by Andrewes.

Occurrence in New Guinea. **Papua**: 5, Milne Bay, Dec. 1943 (Darlington); 38, Dobodura, Mar.-July 1944 (Darlington); 15, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 8, Port Moresby, Oct. 1944 (Darlington). **N-E. N. G.**: 6, Lae, Oct. 1944 (Darlington); 12, Nadzab, July 1944 (Darlington); 19, Chimbu Valley, Bismarek Range, 5,000-7,000 ft., Oct. 1944 (Darlington); 1, Finschhafen, May 12, 1944 (E. S. Ross, California Acad.); 6, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 12, Hollandia, July-Sept. 1944 (Darlington), and 5, same locality, Nov. 1944 and Feb. 12 and May 1945 (H. Hoogstraal, Chicago Mus.); 10, Hollandia area, W. Sentani, Cyclops Mts., 50-100 m. (*c.* 150-325 ft.), June 22-24, 1959 (J. L. Gressitt, Bishop Mus.); 5, Maffin Bay, Aug. 1944 (Darlington) and 3, same locality, Sept. 1944 (E. S. Ross, California Acad.); 7, Sansapor (Vogelkop), Aug. 1944 (Darlington). Probably occurs throughout New Guinea at low altitudes and to some extent in the mountains.

Measured specimens. One ♂ ♀ from Dobodura and 1 ♂ from Sansapor (proportions listed in this order in each case).

Notes. This species occurs in parts of **Africa**, through **southern Asia** north to **Japan**, and south and east through the islands to **Australia** (south at least to southern New South Wales), and, east of New Guinea, I have seen it from Cape Gloucester, **New Britain** (Darlington), and Bougainville in the **Solomons** (A. B. Gurney, U.S.N.M.), and it is recorded from **New Caledonia**. It is common in a variety of wet, muddy, and grassy places in open country and sometimes also in forest.

The typical form of *fasciatus,* which is apparently the only form in tropical Asia, is testaceous or ferrugineous with head

darker and (except in unpigmented specimens) a somewhat variable dark fascia across the middle of the elytra, and the apices of the elytra are often slightly darkened too. In New Guinea, however, individuals occur (together with typically colored ones) in which the dark area of the elytra is more or less extended, and in extreme cases the elytra are black with 4 pale blotches. The prothorax is always pale.

Tachys fumax n. sp.

Description. With characters of *fasciatus* group as here defined. Form broad; head reddish brown, pronotum slightly darker especially at sides, elytra testaceous with median fascia and apices dark, the dark color more or less produced along suture and margins (but actual margins pale), appendages pale; rather shining, faintly iridescent; head with distinct isodiametric microsculpture. *Head* .73 and .75 width prothorax; eyes large and prominent (as in *fasciatus*), genae very short and forming right angles with sides of neck; antennae with middle segments *c.* 3X long as wide. *Prothorax* transversely subcordate; width/length 1.60 and 1.61; base/apex 1.20 and 1.16; base/head 1.09 and 1.04 sides arcuate anteriorly, broadly but somewhat variably sinuate posteriorly; base and apex subtruncate; posterior angles *c.* right; basal sulcus crenulate laterally, interrupted at middle by a conspicuous longitudinal pore. *Elytra* wide, E/P 1.41 and 1.39; inner discal striae well impressed, outer ones including 6th faint, 7th not distinctly indicated; anterior dorsal puncture just inside 4th stria *c.* ⅓ from base. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus rather widely dilated; last ventral ♀ with a little very fine, short pubescence scarcely visible at *c.* 100X. *Measurements:* length 2.6-2.8; width 1.1-1.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,177) and 12 paratypes all from Sansapor, **Neth. N. G.**, Aug. 1944 (Darlington).

Other material. Three, southern lowlands of Morotai Is., **Moluccas**, Sept. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This new species is so close to *Tachys fasciatus* that I at first thought it might be a Mendelian color form of that species. The two occur together, without intergradation, both at Sansapor and on Morotai Is. However, the color difference seems to be re-enforced by a slightly lighter striation of *fumax*, and I

am therefore treating the latter as a separate species, although I am not sure of its status.

Tachys sibling n. sp.

Description. With characters of *fasciatus* group as here defined. Form normal for group; yellow, head slightly browner, elytra with a median fascia and apices brown; shining, faintly iridescent; microsculpture of front light, visible but not forming distinct complete isodiametric meshes. *Head* .74 and .76 width prothorax; eyes large and prominent, genae forming right angles with sides of neck; antennae with median segments about 3X long as wide. *Prothorax* transverse-subcordate; width/-length 1.55 and 1.55; base/apex 1.16 and 1.19; base/head 1.06. and 1.05; sides arcuate anteriorly, sinuate (variably) posteriorly; base and apex subtruncate; posterior angles *c.* right; basal sulcus finely crenulate, interrupted at middle by a conspicuous longitudinal pore. *Elytra* rather wide; E/P 1.35 and 1.34; inner discal striae impressed and irregularly subcrenulate, outer striae to 5th lighter, 6th not or scarcely indicated; anterior dorsal puncture inside 4th stria about ⅓ from base. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus moderately dilated; ♀ with last ventral segment finely and inconspicuously pubescent. *Measurements:* length 2.4-2.9; width *c.* 0.9-1.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,178) and 6 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington); and 2 additional paratypes from Oro Bay, near Dobodura, Dec. 1943-Jan. 1944 (Darlington).

Other material. One specimen from Nadzab, **N-E. N. G.**, July 1944 (Darlington) may represent this species or may be a related one.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species is very close indeed to *fasciatus,* from which it differs chiefly as indicated in the preceding key.

Tachys beatus n. sp.

Description. With characters of *fasciatus* group as here defined. Slightly larger and more slender than average for group; head and pronotum dark, elytra strikingly bicolored, yellow

with broad transverse median fascia and apices blackish, the dark color extended along suture and margins, but actual margins pale, appendages yellow; shining, slightly iridescent; front without distinct microsculpture. *Head* .73 and .75 width prothorax; eyes large and prominent, genae forming right angles with sides of neck; antennae with middle segments *c.* 3X (or slightly less) long as wide. *Prothorax* subcordate; width/length 1.50 and 1.49; base/apex 1.11 and 1.04; base/head 1.02 and 0.96; sides arcuate anteriorly, rather strongly sinuate before base; base and apex subtruncate; posterior angles acute (slightly more pointed than right); basal sulcus crenulate, interrupted at middle by a conspicuous elongate pore. *Elytra* rather elongate; about ⅓ wider than prothorax (E/P 1.34 and 1.31); 2 inner discal striae well impressed on each elytron, and 2 or 3 additional striae lightly impressed or faintly indicated; anterior dorsal puncture at basal ⅓ just inside 4th stria. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus moderately dilated; last ventral segment not distinctly pubescent or with very slight traces of pubescence in ♀. *Measurements:* length 3.0-3.2; width 1.1-1.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,179) and 6 paratypes from Aitape, **N-E. N. G.**, Aug. 1944 (Darlington); 4 paratypes from Sansapor, **Neth. N. G.**, Aug. 1944 (Darlington); 1 paratype, Bernhard Camp, **Neth. N. G.**, 50 m. (*c.* 150 ft.) altitude, July-Nov. 1938 (J. Olthof, Louwerens Coll.).

Other material. Three, Dobodura **Papua**, Mar.-July 1944 (Darlington); 2 Nadzab, **N-E. N. G.**, July 1944 (Darlington). These specimens differ slightly from the types in size or proportions or color.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Aitape.

Notes. This rather large and conspicuously marked *Tachys* is distinguished from related forms in the preceding key to species of the *fasciatus* group.

Tachys sublobatus n. sp.

Description. With characters of *fasciatus* group as here defined. Form as figured (fig. 44); slightly more slender than usual; color rather variable, from piceous with elytra 4-plagiate

to reddish yellow with suture and median fascia (together forming a broad cross) and apices of elytra dark brown; appendages pale, antennae sometimes slightly darker; shining, usually not distinctly iridescent but sometimes slightly so; front without distinct reticulate microsculpture. *Head* .74 and .77 width prothorax; eyes large and prominent, genae forming right angles with sides of neck; antennae with middle segments about 3X long as wide; frontal grooves more strongly impressed than usual anteriorly; mentum with or without a tooth, 2-foveate at base as usual in group. *Prothorax* subcordate; width/length 1.48 and 1.47; base/apex 1.10 and 1.03; base/head 0.97 and 0.93; sides arcuate anteriorly, strongly and broadly sinuate posteriorly; apex subtruncate or slightly and broadly emarginate, base broadly and slightly lobed, lobe nearly truncate at middle but ending in rather strong (but brief) sinuations at ends of basal sulcus; posterior angles right or (usually) acute; basal sulcus crenulate, interrupted at middle by a conspicuous elongate pore. *Elytra* rather elongate; about ⅓ or more wider than prothorax (E/P 1.33 and 1.40); usually only one (sutural) stria well impressed but second stria sometimes slightly impressed and one or two additional striae faintly indicated (but this is close to being a 1-striate species). Anterior dorsal puncture about ⅓ from base just inside position of (obsolete) 4th stria. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 first segments each front tarsus moderately dilated; ♀ with last ventral with a little, scarcely detectable, short pubescence. *Measurements:* length 2.2-2.8; width 0.8-1.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,180) and 19 paratypes from Nadzab, **N-E. N. G.**, July 1944 (Darlington); 6 paratypes from Lae, **N-E. N. G.**, Oct. 1944 (Darlington); and 2 paratypes from Dobodura, **Papua**, March-July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Nadzab.

Notes. This species probably represents *Tachys cinctus* Putzeys of Amboina, but differs (judging from Andrewes' redescription of *cinctus*, 1925, *Ann. Mus. Civ. Genova* [*Genoa*] **51**, p. 357) in lacking distinct reticulate microsculpture on the head and probably in other details. Moreover, the following new subspecies occurs between areas inhabited by *cinctus* and *sublobatus* and differs from both.

Tachys sublobatus suffusus n. subsp.

Description. Generally similar to typical *sublobatus* but stouter and darker. Color somewhat irregular reddish castaneous with elytra 2-maculate, *i.e.* each elytron with a rather large subapical yellow spot; appendages pale, except basal segments of antennae irregularly darker. *Head* .75 and .75 width prothorax. *Prothorax* relatively broader than in typical *sublobatus* and with relatively broader base; width/length 1.57 and 1.57; base/apex 1.16 and 1.14; base/head 1.03 and 1.02. *Elytra* 1.38 and 1.37 width prothorax, about as in *sublobatus* (or slightly broader) except 2nd stria well impressed for part of its length on disc (rarely so in typical *sublobatus*). *Measurements:* length 2.5-2.8; width 1.0-1.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,181) and 2 paratypes from Maffin Bay **Neth. N. G.**, Aug. 1944 (Darlington), and 1 additional paratype from same locality, Aug. 1944 (E. S. Ross, California Acad.).

Measured specimens. The ♂ holotype and 1 (M.C.Z.) paratype.

Notes. Sufficiently compared with typical *sublobatus* in the preceding description.

Tachys mastersi exul n. subsp.

Description. With characters of *fasciatus* group as here defined. Head relatively smaller and elytra relatively wider and with wider margins than usual in group; reddish brown, faintly iridescent or silky, front with distinct reticulate microsculpture. *Head* .69 and .71 width prothorax; eyes moderately large and prominent (less so than in *fasciatus*), genae forming obtuse (not quite right) angles with sides of neck; antennae with middle segments slightly more than 3X long as wide. *Prothorax* transversely subcordate; width/length 1.59 and 1.58; base/apex 1.32 and 1.30; base/head 1.22 and 1.19; sides arcuate for most of length, rather weakly (somewhat variably) sinuate toward base; apex subtruncate or broadly emarginate, sometimes slightly lobed at middle; base subtruncate, broadly and slightly lobed; posterior angles usually slightly obtuse (nearly right), slightly blunted; basal transverse sulcus less impressed than usual but distinct and crenulate, usually with a distinct (but variable) longitudinal sulciform impression at middle; area behind sulcus longitudinally rugulose. *Elytra* broader and with sides more

rounded than usual; E/P 1.48 and 1.50; margins unusually broad laterally; 2 or 3 inner discal striae more or less impressed (1st most impressed) and 1 or 2 additional striae indicated especially anteriorly on disc; anterior dorsal puncture about ⅓ from base on (position of) 4th stria. *Inner wings* fully developed. *Lower surface*, *legs*, and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus rather widely dilated; last ventral segment not distinctly pubescent in either sex. *Measurements:* length 2.6-3.0; width 1.2-1.3 mm.

Types. Holotype ♂ (M.C.Z. No. 30,182) and 14 paratypes all from Sansapor (Vogelkop), **Neth. N. G.**, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Tachys mastersi Sloane ranges (with some variation) in eastern Australia from part of the Cape York Peninsula to southern New South Wales. The present subspecies, although from the farthest end of New Guinea, resembles typical *mastersi* rather closely, differing from it in having slightly better defined basal prothoracic angles, slightly longer antennal segments, and in other minor ways. This species is represented in the main part of New Guinea by another, more distinct subspecies; and there is another form in the Philippines (Leyte). I should add that I am not sure that all these forms really represent a single species. Their adequate study would require much more time than I can give them at present. But to treat them as subspecies now emphasizes their probable relationships in a useful fashion. All the forms occur among dead leaves and other debris by water usually in shady places.

Tachys mastersi pinguis n. subsp.

Description. With characters of *fasciatus* group as here defined. Form as figured (fig. 45); stouter and more convex than usual in group, about as in preceding subspecies except slightly more convex; dark castaneous, often (not always) 2-maculate (each elytron with a more or less distinct reddish-yellow spot about ⅓ from apex); moderately shining, slightly iridescent or silky; head with distinct reticulate microsculpture. *Head* about as in preceding subspecies; .69, .68, and .71 width prothorax. *Prothorax* transversely subcordate; width/length 1.53, 1.53, and 1.60; base/apex 1.17, 1.21, and 1.14; base/head 1.09, 1.12, and 1.07; sides arcuate anteriorly, straight and converging or broadly sinuate posteriorly; posterior angles usually more or

less obtuse, sometimes nearly right; base and apex subtruncate; basal sulcus impressed and crenulate at sides but interrupted at middle, area of interruption usually smooth; basal area of prothorax (behind sulcus) usually smooth, but sometimes (in some Maffin Bay specimens) more or less rugose and with a median-basal longitudinal pore indicated. *Elytra* 1.39, 1.40, and 1.42 width prothorax, a little more convex and with striation fainter than in preceding subspecies. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* as in preceding subspecies. *Measurements:* length 2.3-2.8; width 1.1-1.3 mm.

Types. Holotype ♂ (M.C.Z. No. 30,183) and 54 paratypes all from Dobodura, **Papua**, Mar-July 1944 (Darlington).

Other material. Eight, Aitape, **N-E. N. G.**, Aug. 1944 (Darlington); 13, Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington); 15, Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington). Specimens from these localities vary slightly, but hardly enough to justify making additional subspecies.

Measured specimens. The holotype, 1 ♀ paratype from Dobodura, and 1 ♂ from Maffin Bay; proportions listed in this order in each case.

Notes. This very distinct subspecies, or possibly full species, stands geographically between typical *mastersi* of eastern Australia and subspecies *exul* of the Vogelkop. The slightly more convex form, darker color, relatively narrower base of prothorax, and especially the smoother basal area of the pronotum distinguish it from *exul.* The elytral spotting varies individually and geographically. Some specimens from Dobodura are unspotted; others, more or less clearly spotted. Those from Aitape are all unspotted. Those from Hollandia are unspotted or with spots rather vaguely indicated. Those from Maffin Bay are all plainly spotted.

Tachys masculus n. sp.

Description. With characters of *fasciatus* group as here described. Form of average small member of group; brown, elytra 4-maculate (a broad basal area and broad subapical area of each elytron yellow), appendages pale; front with distinct reticulate microsculpture. *Head* .68 and .69 width prothorax; eyes smaller and less prominent than in *fasciatus,* genae forming somewhat obtuse angles with sides of neck; antennae with middle segments about 3X long as wide. *Prothorax* subcordate;

width/length 1.54 and 1.57; base/apex 1.16 and 1.16; base/head 1.14 and 1.12; sides arcuate anteriorly then straight and rather strongly converging almost to base, then briefly sinuate; apex subtruncate or broadly emarginate, base subtruncate (very slightly lobed across middle, slightly oblique at sides); posterior angles obtuse or almost right, slightly blunted; basal sulcus entire, not distinctly crenulate, without a differentiated median pore; basal area (behind sulcus) longitudinally rugose. *Elytra* rather short, more than ⅓ wider than prothorax (E/P 1.38 and 1.38); 2 inner striae lightly impressed on each elytron and 2 or 3 additional striae more lightly or faintly indicated; anterior dorsal puncture on 4th stria about ⅓ from base. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus widely dilated, the 2nd segment much wider than long; last ventral of ♀ scarcely detectably pubescent. *Measurements:* length 2.0-2.1; width *c.* 0.9 mm.

Types. Holotype ♂ (M.C.Z. No. 30,184) and 30 paratypes from Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington).

Additional material. Five, Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington); 1, Aitape, **N-E. N. G.**, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. I cannot say to what other species this is most closely allied; it is sufficiently distinguished from others in the preceding key to species.

Tachys masculus filius n. subsp.

Description. Similar to typical *masculus* (above) but almost unicolorous, without elytral maculae. *Head* .71 and .73 width prothorax. *Prothorax:* width/length 1.61 and 1.54; base/apex 1.20 and 1.20; base/head 1.13 and 1.11. *Elytra:* width elytra/-width prothorax 1.33 and 1.39. Other details, including wide ♂ front tarsi, as in typical subspecies. *Measurements:* length 2.3-2.5; width *c.* 1.0 mm.

Types. Holotype ♂ (M.C.Z. No. 30,185) and 6 paratypes all from Sansapor (Vogelkop), **Neth. N. G.**, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Sufficiently compared with typical *masculus* in the preceding description.

Tachys flavax n. sp.

Description. With characters of *fasciatus* group as here described. Form of average, slightly depressed member of group; yellow, head not or scarcely darker; surface moderately shining, not or slightly iridescent, slightly silky; front with distinct reticulate microsculpture. *Head* .76 and .74 width prothorax; eyes moderately prominent, genae forming right or slightly obtuse angles with sides of neck; antennae with middle segments 3X or slightly less long as wide. *Prothorax* transverse-subquadrate; width/length 1.61 and 1.62; base/apex 1.15 and 1.13: base/head 1.06 and 1.09: sides arcuate for most of length, rather strongly sinuate near base; base and apex subtruncate; posterior angles right or slightly obtuse, slightly blunted; basal sulcus normally impressed, not distinctly crenate, not interrupted at middle; basal area behind sulcus only slightly roughened. *Elytra* of moderate length; nearly ⅓ wider than prothorax (E/P 1.33 and 1.31); about 5 discal striae on each elytron, inner one slightly impressed, outer ones faint; anterior dorsal puncture on 4th stria about ⅓ from base. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal: ♂ with 2 segments each front tarsus rather narrowly dilated; ♀ with a little sparse inconspicuous pubescence on last ventral. *Measurements:* length 2.0-2.3; width 0.8-0.9 mm.

Types. Holotype ♂ (M.C.Z. No. 30,186) and 6 paratypes all from Port Moresby, **Papua**, Oct. 1944 (Darlington).

Additional material. One ♂, Dobodura, **Papua**, Mar.-July 1944 (Darlington); 1 ♀ Oro Bay (near Dobodura), **Papua**, Dec. 1943-Jan. 1944 (Darlington); 1 ♀, Nadzag, **N-E. N. G.**, July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Very smiliar to *Tachys transversicollis* Macleay of Australia, but *transversicollis* has the anterior dorsal puncture of the elytron on the 5th stria; it is on the 4th in the present species.

Tachys luscus n. sp.

Description. With characters of *fasciatus* group as here defined. Form of small, broad member of group; head brown, prothorax yellow, elytra yellow with very broad submedian fascia brown, the brown color extended in both directions along the suture, appendages pale; surface faintly iridescent or silky;

part of front with distinct reticulate microsculpture. *Head* .69 and .69 width prothorax; eyes considerably reduced in size and prominence, with genae more than half as long as eyes and forming very obtuse angles with sides of neck; antennae with middle segments at least 3X long as wide. *Prothorax* transverse-subcordate; width/length 1.56 and 1.49; base/apex 1.10 and 1.11; base/head 1.10 and 1.09; sides arcuate anteriorly, rather broadly sinuate posteriorly, almost parallel at base; apex broadly emarginate, with angles more advanced than usual; base subtruncate, slightly and broadly lobed; posterior angles almost right; basal sulcus entire, not distinctly crenulate, without distinct median pore; basal area (behind sulcus) longitudinally rugose. *Elytra* broad, about 2/5 wider than prothorax (E/P 1.38 and 1.46); each elytron with 2 inner striae slightly impressed, and 2 or more additional ones faintly indicated; stria 8 fragmentary (as usual in small species of this group); anterior dorsal puncture on or outside 4th stria (the striae are so indistinct that their relation to the puncture is hard to determine), posterior puncture inside striole (farther from striole than usual) behind its hooked tip. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* (of ♀) normal; ♂ unknown; last ventral segment ♀ with a little short, sparse, inconspicuous pubescence. *Measurements:* length 2.3-2.5; width c. 1.0 mm.

Types. Holotype ♀ (M.C.Z. No. 30,187) and 2 (♀ ♀) paratypes all from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington).

Measured specimens. The ♀ holotype and 1 paratype.

Notes. This species may be related to *masculus* (above); in the absence of the ♂ it is difficult to decide about this. However, the present species differs from *masculus* in having smaller eyes, a broader prothorax with more broadly sinuate sides, and the posterior dorsal elytral puncture farther from (inside of) the recurved striole. Moreover the color is different: the prothorax is dark in *masculus*, pale in the present species, and the elytral markings are slightly different.

Tachys ambulatus n. sp.

Description. With characters of *fasciatus* group as here defined. Form of a small, rather slender member of group; head brown, prothorax yellow, elytra yellow with very broad transverse fascia centered slightly before middle and extending in

both directions along suture; surface faintly iridescent and silky; front with distinct reticulate microsculpture. *Head* .66 and .71 width prothorax; eyes reduced and only slightly prominent, genae more than half as long as eyes, forming very obtuse angles with sides of neck; antennae with middle segments almost 4X long as wide. *Prothorax* subcordate but with relatively broad base; width/length 1.45 and 1.41; base/apex 1.19 and 1.16; base/head 1.15 and 1.07; sides arcuate for much of length, then strongly sinuate before base; posterior angles *c.* right; basal sulcus entire, not distinctly crenulate, without median pore; basal area (behind sulcus) longitudinally rugose. *Elytra* moderately long, about ⅖ wider than prothorax (E/P 1.40 and 1.37); 2 or 3 inner striae lightly or irregularly impressed, and striae 4 and 5 indicated at least in part; 8th stria fragmentary; anterior dorsal puncture on or just outside stria 4 about ⅓ from base. *Inner wings* reduced, shorter than elytra (*c.* ¾ elytral length), not folded or slightly folded at tip. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus widely dilated; ♀ with a little short sparse pubescence on last ventral segment. *Measurements:* length 2.4-2.8; width 1.0-1.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,188) and 13 paratypes all from Aitape, **N-E. N. G.**, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This may be related to or even a form of *luscus*, but without a ♂ of the latter I cannot be sure.

Tachys avius n. sp.

Description. With characters of *fasciatus* group as here defined. Form of a small, rather slender species of group; brown, head slightly darker, appendages brownish; faintly iridescent or silky; front with rather lightly impressed reticulate microsculpture. *Head* .71 and .69 width prothorax; eyes small and only slightly prominent, genae more than half as long as eyes, forming very obtuse angles with sides of neck; antennae with middle segments about 3X long as wide. *Prothorax* subcordate, width/length 1.52 and 1.56; base/apex 1.21 and 1.19; base/head 1.12 and 1.10; sides arcuate anteriorly, rather strongly converging posteriorly, then moderately sinuate; apex subtruncate or broadly emarginate, slightly lobed at middle, base subtruncate at middle, slightly oblique at sides; posterior angles obtuse (almost right), slightly blunted; basal sulcus entire, not or vaguely crenulate, without median pore; basal area (behind sulcus)

somewhat rugose. *Elytra* rather elongate, slightly more narrowed anteriorly than usual, about ⅓ wider than prothorax (E/P 1.37 and 1.32); each elytron with 2 inner striae slightly impressed, and 2 or 3 additional striae faintly indicated; stria 8 fragmentary; anterior dorsal puncture on 4th stria about ⅓ from base. *Inner wings* dimorphic, reduced in 4 specimens to about ⅔ or ¾ length of elytra and not or slightly folded, but fully developed in 1 ♀ paratype. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus moderately dilated (less so than in *masculus*); ♀ with a little short, sparse, inconspicuous pubescence on last ventral segment. *Measurements:* length *c.* 2.1; width *c.* 0.8 mm.

Types. Holotype ♂ (M.C.Z. No. 30,189) and 4 paratypes all from Dobodura, **Papua**, Mar.-July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This species may represent *masculus,* which is not known to occur in eastern New Guinea, but I am not sure of the relationship. The present species has the ♂ tarsi, especially the 2nd segment, less dilated than in *masculus.* The dimorphism of the inner wings is, taxonomically, a relatively unimportant character.

Tachys quadrillum Group

The *quadrillum* group of *Tachys* is similar to the *fasciatus* group in most characters, but differs as follows: anterior dorsal puncture of elytron on 3rd stria not much before middle (farther back than usual in *fasciatus* group); posterior puncture on (not within) hooked tip of recurved striole (fig. 41) (this character is derived from Hayward's 1899 revision of North American *Tachys*); ♀ with inner subapical setae of last ventral segment nearer margin (more in line with outer setae) than in *fasicatus* etc. Members of the group can often, but not always, be recognized by form (parallel sided) and color (often dark with elytra 4- or 6-maculate or striped with pale). All the species are fully winged, so far as I know.

This group, like the preceding one, is nearly world-wide in distribution, but the species usually occur on salt marshes and in other saline and perhaps alkaline habitats rather than by fresh water. Some of the salt-marsh or coastal species have very wide ranges. They vary in markings and in other characters, and are difficult taxonomically. For these reasons, and because I have seen few specimens from New Guinea, I have not attempted original work in this group but have followed the (not

fully satisfactory) arrangement of species suggested by Andrewes in his 1925 revision of Oriental *Tachys*.

Key to species of Tachys of quadrillum group of New Guinea

1. More slender, elytra more than ½ longer than wide, prothoracic width/length *c.* 1.41; length about 2.5 mm. (p. 428) ..... *queenslandicus*
— Stouter, elytra not more than ½ longer than wide, prothoracic width/length *c.* 1.53-1.59; length usually more than 2.5 mm. 2
2. Elytron with 3 dorsal striae well impressed; (usually larger but measurements overlap) (p. 428) ..... *plagiatus*
— Elytron with 2 dorsal striae well impressed (3 etc. faintly impressed); (usually smaller) (p. 429) ..... *quadrillum*

Tachys queenslandicus Sloane

Sloane 1903, Proc. Linn. Soc. New South Wales **28**, p. 577.
—— 1921, Proc. Linn. Soc. New South Wales **46**, pp. 199, 207.
cruciger Putzeys 1875, Ann. Mus. Civ. Genova (Genoa) **7**, p. 747 (not *cruciger* Bates 1871).
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 368, 369.

Description. None required here; see preceding key and following notes. Proportions and measurements of a New Guinean specimen are width head/prothorax .84; prothoracic width/length 1.41, base/apex 1.07, base/head .94; width elytra/prothorax 1.38; total length *c.* 2.3, width *c.* 0.9 mm.

Types. Of *queenslandicus*, from Townsville, Queensland, **Australia**, in the Sloane collection at Canberra (seen by me in 1957); of *cruciger*, from Macassar, **Celebes**, in Genoa Civic Mus. (seen by Andrewes).

Occurrence in New Guinea. The only New Guinean specimens seen or recorded are from "Dor(e)y," **Neth. N. G.** (Wallace); see following notes.

Measured specimen. One ♀, "Dory" (Wallace).

Notes. This species ranges at least from **Celebes** and the **Philippines** to northeastern **Australia**, and it should be widely distributed on salt marshes etc. along the coasts of New Guinea, although the only specimens known from the island are from Wallace's doubtful Dorey material (see p. 331).

Tachys plagiatus Putzeys

Putzeys 1875, Ann. Mus. Civ. Genova (Genoa) **7**, p. 475.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 369, 370.
doddi Sloane 1903, Proc. Linn. Soc. New South Wales **28**, pp. 578, 580.
—— Sloane 1921, Proc. Linn. Soc. New South Wales **46**, pp. 199, 206.

Description. See preceding key, and notes under following species. Proportions and measurements of a New Guinean example are width head/prothorax .73; prothoracic width/length 1.59, base/apex 1.17, base/head 1.13; width elytra/prothorax 1.31; total length 2.7, width 1.1 mm.

Types. Of *plagiatus*, from Macassar, **Celebes**, in Genoa Civic Mus. (seen by Andrewes); of *doddi*, from Townsville, Queensland, **Australia**, in the Sloane collection at Canberra (seen by me in 1957).

Occurrence in New Guinea. **Neth. N. G.**: several, "Dorey" (Wallace). **Papua**: 1, Port Moresby, Oct. 1944 (Darlington). Presumably widely distributed on the island especially near the coast.

Measured specimen. One ♀, Port Moresby.

Notes. The range of this species (including its color varieties, Andrewes 1925) is apparently from **Siam**, **Tonkin**, **Formosa**, and the **Philippines** to northeastern **Australia.**

Tachys quadrillum Schaum

Schaum 1860, Berliner Ent. Zeits. **4**, p. 201.

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 369, 372 (see for varieties, which do not concern New Guinea).

—— 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 228 (see for synonymy and additional references).

Description. None needed here. See preceding key and following notes. Proportions and measurements of a "Dorey" example and of one from Lae are width head/prothorax .74 and .73; prothoracic width/length 1.53 and 1.56, base/apex 1.11 and 1.16, base/head 1.03 and 1.09; width elytra/prothorax 1.37 and 1.36; total length *c.* 2.5 and 2.7, width *c.* 1.05 and 1.1 mm.

Type. From **Celebes**, in Genoa Civic Mus. (seen by Andrewes).

Occurrence in New Guinea. **Neth. N. G.**: several, "Dorey." **N-E. N. G.**: 1, Madang ("Friedrich-Wilh.-hafen"), 1896 (Biró); 1, "I. Deslacs" (Garove Is.), 1901 (Biró); 1, Lae, Oct. 1944 (Darlington). **Papua**: 1, Port Moresby, Oct. 1944 (Darlington).

Measured specimens. One (sex?), "Dorey"; 1 ♂, Lae.

Notes. According to Andrewes, this species extends from **Ceylon**, **India**, and southern **China** to **New Guinea**. Also according to Andrewes, this species is close to *plagiatus* (above) but is smaller, with narrower head, flatter eyes, prothorax more constricted behind, and 3rd elytral stria less impressed, but some or

all of these characters are inconstant. However, I think two species are involved. In some localities, *plagiatus* tends to be 6-maculate; *quadrillum*, 4-maculate; but this is not a constant difference either.

Tachys truncatus Group

The *Tachys* of the *truncatus* group are small to minute, brown to yellow (not maculate), and characterized by: mentum with 2 pores (except *truncatus*): eyes minutely pubescent; antennae submoniliform, with segment 2 longer than 3; elytra subtruncate, with margins setulose and finely dentate; only stria 1 impressed, stria 8 reduced to a few widely spaced punctiform impressions, and apical striole absent or abbreviated; 2 dorsal punctures, the anterior usually on (position of) 3rd stria (nearer 4th stria in *exochrias*), the posterior on 3rd stria rather far back; ♂ anterior tarsi not dilated; ♂ with 1, ♀ 2 setae each side last ventral segment, the inner setae in ♀ farther from the margin than the outer pair; last ventral inconspicuously pubescent in both sexes. See *acaroides* group (p. 472) for species that might be confused with *truncatus* and its allies.

Tachys truncatus itself extends from tropical Asia to New Guinea and is probably related to the European *brevicornis* Chaudoir (according to Andrewes) and to *captus* Blackburn of eastern Australia. The other New Guinean species of the group are more restricted in range. The species of this group that I have collected in New Guinea and Australia were found in old stumps and debris on the ground, not specifically near water.

Key to species of Tachys of truncatus group of New Guinea

1. Mentum without foveae (p. 431) ..... *truncatus*
— Mentum with 2 conspicuous foveae at base 2
2. Elytron with sharply impressed apical striole extending forward more than halfway from tip to posterior dorsal puncture of elytron (p. 431) ..... *ochrioides*
— Elytron without distinct apical striole 3
3. Anterior dorsal puncture of elytron near 4th stria; (rather slender, yellow) (p. 432) ..... *exochrias*
— Anterior dorsal puncture of elytron on 3rd stria 4
4. Prothorax with basal angles blunted, sides of base somewhat rounded-oblique (p. 431) ..... (foveate form of) *truncatus*
— Prothorax with basal angles well defined, sides of base truncate 5
5. Dorsal microsculpture indistinct (p. 433) ..... *brachys*
— Dorsal microsculpture distinct (p. 434) ..... *subbrunneus*

Tachys truncatus (Nietner)

Bembidion truncatum Nietner 1858, Ann. Mag. Nat. Hist. (3) **2**, p. 421.
Tachys truncatus Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 374, 375.
—— 1925, Fauna British India, etc., Coleop., Carabidae **2**, p. 230 (see for synonymy and additional references).

Description (for recognition only). A very small *Tachys* with characters of group (above) except usually without distinct foveae at base of mentum. See preceding key for identification of exceptional individuals with foveate mentum. Proportions: head .78 and .77 width prothorax; prothoracic width/length 1.53 and 1.51, base/apex 1.06 and 1.07, base/head 1.00 and 1.04; width elytra/prothorax 1.30 and 1.28. *Measurements:* length 1.25-1.5; width *c.* 0.5 mm.

Type. From Ceylon, in Berlin Zool. Mus. (*t.* Andrewes).

Occurrence in New Guinea. **Neth. N. G.**: 2, Hollandia, July-Sept. 1944 (Darlington); 5, Maffin Bay, Aug. 1944 (Darlington). **N-E. N. G.**: 12, Stephansort, Astrolabe Bay, 1897 and 1898 (Biró, Hungarian National Mus.); 1, Seleo, Berlinh. (= Aitape), 1896 (Biró, Hungarian National Mus.); 3, Madang ("Friedrich-Wilh.-hafen"), 1896 and 1901 (Biró, Hungarian National Mus.).

Measured specimens. Two ♀ ♀ from Maffin Bay.

Notes. T. truncatus is recorded (by Andrewes 1935) from **Ceylon**, **India**, and **Burma** to **Sumatra**, **Java**, **Borneo**, and the **Philippines**, and I have specimens from Morotai Is., **Moluccas**, and Cape Gloucester, **New Britain**, as well as **New Guinea**. Specimens from New Guinea agree reasonably well with Javan ones. The 3 individuals from Madang are exceptional: one has the mentum conspicuously foveate, the others not; and all have the eyes smaller and flatter than usual in *truncatus*.

A specimen of this species in the U.S.N.M. is labeled "in lily bulb from Japan at Seattle (No. 2747) Wash."

Tachys ochrioides n. sp.

Description. With characters of *truncatus* group as here defined. Slender (in group); entirely testaceous; microsculpture faint. *Head* large (as usual in group), .77 and .78 width prothorax; eyes moderate in size and prominence, genae behind them oblique, forming obtuse angles with neck; antennae more slender than usual in group, middle segments 1½-2X long as wide, segment 2 slightly longer than 3; frontal impressions

short and slight; mentum with 2 conspicuous foveae at base. *Prothorax* transversely subcordate; width/length 1.50 and 1.52; base/apex 1.04 and 1.08; base/head .99 and 1.00; sides rounded in about anterior ¾, broadly sinuate posteriorly; apex broadly emarginate but anterior angles not otherwise advanced; base with very short broad lobe at middle, slightly oblique at sides; basal angles well-defined (slightly blunted), almost right (slightly obtuse); disc with usual impressed lines; basal sulcus entire, not distinctly crenate, but area behind it roughened. *Elytra* subparallel, about ⅓wider than prothorax (E/P 1.36 and 1.34); margins rather strongly but obtusely angulate at humeri, ending inwardly about opposite ends of 4th striae, setulose and finely dentate as usual in group; sutural stria well impressed only apically, faint anteriorly, and other discal striae at most faintly indicated; 8th stria subobsolete except vaguely impressed posteriorly and represented by usual widely spaced punctiform impressions; apical striole sharply impressed but abbreviated anteriorly, not reaching posterior dorsal puncture of elytron; elytron with two dorsal punctures on (position of) 3rd stria, anterior one slightly before middle, posterior one far back, at top of apical declivity, in line with abbreviated apical striole. *Inner wings* fully developed. *Lower surface, legs*, and *secondary sexual characters* normal for group. *Measurements:* length *c.* 2.0; width *c.* 0.75 mm.

Types. Holotype ♀ (M.C.Z. No. 30,190) and 1 ♀ paratype from Nadzab, **N-E. N. G.**, July 1944 (Darlington); and 3 additional paratypes, all from **N-E. N. G.**, as follows: 1, Erima, Astrolabe Bay; 1, Madang (Friedrich-Wilh.-hafen); 1, Stephansort, Astrolabe Bay (these 3 specimens collected by Biró in 1896, 1901, and 1898).

Occurrence in New Guinea. Known only from the types.

Measured specimens. The ♀ holotype and 1 (sex?) paratype from Madang.

Notes. This species is somewhat similar to *Tachys ochrias* Andrewes of India and Burma but is more slender, with better defined posterior prothoracic angles, more angulate humeri, and longer apical elytral strioles.

Tachys exochrias n. sp.

Description. With characters of *truncatus* group as here defined; rather slender (in group); testaceous; microsculpture rather lightly impressed, nearly isodiametric on front, transverse on disc of pronotum (where faint) and elytra. *Head* .74

width prothorax; eyes rather small but still moderately convex, with genae very short, oblique, antennae submoniliform, but middle segments slightly longer than wide, segment 2 longer than 3; frontal grooves short, poorly defined; mentum with 2 foveae at base. *Prothorax* transversely subcordate, rather strongly narrowed behind; width/length 1.54; base/apex 1.13; base/head 1.08; sides rounded anteriorly, almost straight and rather strongly converging posteriorly, briefly sinuate before posterior angles; apex subtruncate or broadly emarginate but anterior angles not otherwise advanced; base with very short broad lobe at middle, slightly rounded-oblique at sides, basal angles somewhat blunted; disc with usual impressed lines, basal transverse sulcus entire, not distinctly crenate, but area behind it roughened. *Elytra* about ⅓ wider than prothorax (E/P 1.35); margins rounded at humeri, ending inwardly about opposite bases 4th striae, setulose and minutely dentate as usual; sutural striae nearly entire, deepest posteriorly; other discal striae indicated; 8th stria obsolete as usual; apical striole almost obsolete; each elytron with 2 dorsal punctures, about ⅓ from base almost on (just inside of) 4th stria, and slightly behind apical ⅓ on 3rd stria. *Inner wings* fully developed. *Lower surface, legs*, and *secondary sexual characters* (of ♀) normal for group. *Measurements:* length 1.6; width 0.6 mm.

Type. Holotype ♀ (M.C.Z. No. 30,191) from Oro Bay, **Papua**, Dec. 1943-Jan. 1944 (Darlington).

Occurrence in New Guinea. Known only from the type.

Measured specimen. The type.

Notes. Although this new species somewhat resembles both *ochrioides* and *ochrias*, it differs from them in lacking a distinct remnant of the apical striole and in having the anterior dorsal elytral puncture nearer the 4th than the 3rd stria; the latter character separates it from all previously known species of the *truncatus* group.

Tachys brachys Andrewes

Andrewes, 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 375, 377.
decolor Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 375, 378 (new synonymy).

Description. See key, and following notes. Proportions: head .73 and .71 width prothorax; prothoracic width/length 1.53 and 1.53, base/apex 1.11 and 1.16; base/head 1.05 and 1.09; width elytra/prothorax 1.37 and 1.38. *Measurements:* length *c.* 1.5; width *c.* 0.6 mm.

Types. Andrewes described both *brachys* and *decolor* from series without designating single types. However, he selected and marked a "type" for each form in his collection, and I here designate these specimens, selected by Andrewes, as lectotypes. The lectotype (by present designation) of *brachys* is the dark Singapore ("Spore") example mentioned by Andrewes; that of *decolor* is also from Singapore ("Singapore, M. Cameron"); both are in the Andrewes collection, British Mus.

Occurrence in New Guinea. **N-E. N. G.**: 3, Erima, Astrolabe Bay, 1896 (Biró, Budapest Mus.).

Measured specimens. Two (♀ ♀) from Erima.

Notes. "Var." *decolor* seems to be simply a pale form of *brachys*, not primarily geographical, and not worth distinguishing by name. *Tachys brachys,* including *decolor,* is now known to occur in **India** (and perhaps **Ceylon**), southeastern **China** (Ningpo), **Singapore**, **Formosa**, the **Nicobars**, Morotai Is. in the **Moluccas** and **New Guinea**. The species varies not only in color but also in state of wings. Some (most?) individuals are fully winged, but a cotype of *decolor* from Formosa (Takao, H. Sauter) has the wings reduced to unfolded strips about ⅔ as long as elytra, and 3 specimens from Morotai Is. have wings still more reduced, to about ¼ elytral length. (I assign these Morotai specimens to *brachys* with doubt.) The 3 specimens from New Guinea, however, are fully winged.

Tachys subbrunneus n. sp.

Description. With characters of *truncatus* group as here defined. Moderately stout and convex; brown or yellowish brown, appendages testaceous; microsculpture distinct but rather lightly impressed, nearly isodiametric on front, transverse on pronotum and elytra. *Head* .70 and .72 width prothorax; eyes rather small, moderately prominent, genae behind them short and oblique, forming obtuse angles with neck; antennae submoniliform, segment 2 longer than 3; frontal grooves short and poorly defined; mentum conspicuously bifoveate. *Prothorax* transversely subcordate; width/length 1.47 and 1.48; base/apex 1.20 and 1.21; base/head 1.18 and 1.12; sides rounded, broadly and rather strongly sinuate basally; apex subtruncate or broadly emarginate, but anterior angles not otherwise advanced; base with broad short lobe at middle, truncate laterally (or even trending slightly backward), with posterior angles well defined and approximately right; disc with usual impressions, sparsely

and faintly punctulate; basal transverse sulcus entire, not distinctly crenate, but area behind it roughened (somewhat longitudinally so). *Elytra* broad (E/P 1.43 and 1.41), with greatest width behind middle; margins rounded at humeri, ending inwardly about opposite ends of 4th striae, setulose at and behind humeri; apices vaguely subtruncate; sutural striae almost entire (but more deeply impressed posteriorly), other discal striae indicated, stria 8 obsolete except for widely spaced punctiform impressions, apical striole nearly obsolete; dorsal punctures on 3rd stria at about ⅓ and ⅔ of length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal for group; abdomen with a little fine, inconspicuous pubescence in both sexes. *Measurements:* length 1.3-1.6; width *c.* 0.6 mm.

Types. Holotype ♂ (M.C.Z. No. 30,192) and 15 paratypes from Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington); 4 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington); and 4 paratypes from Aitape, **N-E. N. G.**, Aug. 1944 (Darlington).

Occurrence in New Guinea. Known only from the types.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Maffin Bay.

Notes. This new species is probably related to *Tachys brunneus* Andrewes of Borneo, which I have not seen, but is apparently a little stouter and more convex, with slightly different frontal furrows (not diverging behind), better impressed sutural striae, and appendages entirely testaceous (outer part of antennae evidently brown in *brunneus*).

Tachys politus (incl. exaratus) Group

Noteworthy characters of the *politus* group in New Guinea are these: form varying from rather narrow and somewhat depressed to very broad and convex (compact), and sometimes fusiform; color varying from testaceous to black, with or without elytral markings; microsculpture variable, often absent or nearly so. *Head:* mentum without foveae; antennae usually of moderate length, rarely submoniliform; frontal foveae short, not extending across clypeus, but otherwise variable. *Prothorax* usually subcordate, but variable; disc usually with vague anterior transverse impression, finely impressed middle line, and variable basal sulcus which is sometimes obsolete. *Elytra* with margin usually broadly rounded (rarely angulate) at humeri,

ending inwardly about opposite bases of 5th or 4th striae, not serrate and not distinctly setulose (at 54X), striation variable, not entire (in New Guinean species); 8th stria variable, usually entire, sometimes interrupted or weakly impressed at middle; apical striole well impressed, rather short, its anterior end about midway between suture and lateral margin, with a strong puncture on its inner side about midway of its length (but somewhat variable in position); 2 dorsal punctures on or inside of (position of) 3rd stria on each elytron. *Inner wings* fully developed (in New Guinean species). *Lower surface:* prosternum usually sulcate; metasternum usually with an arcuate transverse groove behind the process (this character cited from Andrewes, not used here); ventral pubescence usually not distinguishable at 54X but sometimes just visible on last ventral of ♀. *Secondary sexual characters:* ♂ with 2 segments each front tarsus slightly or not dilated, inconspicuously squamulose below; ♂ with 1, ♀ 2 setae each side last ventral segment, the 2nd (inner) setae in ♀ nearly in line with the others.

The *politus* group as here constituted includes Andrewes' *exaratus* group, which was distinguished by Andrewes mainly by the form of the 8th elytral stria, deeply impressed in the *politus* group (as Andrewes defined it), but interrupted or lightly or irregularly impressed in the *exaratus* group. However, there is, in different species in New Guinea, every stage of transition of the 8th stria from interrupted, through almost interrupted, lightly impressed, and moderately impressed but still close to margin, to deeply impressed and bowed away from margin. These differences are useful in distinguishing species, but (in New Guinea) they are hardly good group characters. On the other hand, I have removed from this group one species included by Andrewes in his *exaratus* group. It is *singularis,* here made the type of a new group to which one New Guinean species is assigned.

The *politus* group is world-wide in distribution, or nearly so. Several of the species that occur in New Guinea range rather widely in adjacent areas: *ceylanicus*, from Ceylon, India, and the Philippines to New Guinea; *bembidiiformis*, from Java and the Philippines to Australia; and *aeneus* is known from Celebes and Sumbawa, and *borneensis* from Borneo, as well as from New Guinea. The other 25 species of the group here treated are, so far as known, confined to New Guinea and in some cases to closelying islands. In habits, most members of this group occur on the ground by water or in wet places. Some species, including those

near the beginning and end of the key (*reticulatus* and its allies and *fusiformis* and its allies) live beside running streams, although the exact kind of stream varies with the different species: some prefer large rivers; others, brooks of one sort or another. A number of other species occur beside standing water or simply in wet places. However, at least one species, *aeneus*, although not very different from some of the water-loving ones, is very common under cover on the ground in dry, even in sandy places.

Key to Tachys of politus Group of New Guinea

1. Elytron with less than 4 well impressed dorsal striae, *and* dorsal striae (those present) spaced normally from suture outward 2
— Elytron with at least parts of 4 or more well impressed dorsal (including sutural) striae, *or* striae very irregularly spaced (see couplet 20) 20
2. Head relatively wider, .75 or more width prothorax; stria 8 of elytron sometimes (not always) interrupted at middle; disc of pronotum often (not always) with *isodiametric* microsculpture 3
— Head relatively narrower, .75 or less width prothorax (in borderline cases try both halves of couplet); *and* stria 8 always entire; *and* disc of pronotum with microsculpture (if present) not isodiametric 9
3. Stria 8 interrupted 4
— Stria 8 not interrupted 5
4. Microsculpture of pronotum not isodiametric; form broader (p. 439) *loriae*
— Microsculpture of pronotum isodiametric; form narrower (p. 440) *reticuloides*
5. Elytron with 1 or 2 dorsal striae well impressed, 3rd at most lightly indicated 6
— Elytron with 3 dorsal striae impressed at least in part 8
6. Elytron with 1 (the sutural) stria well impressed, stria 2 less so; (dorsal microsculpture almost lacking); (elytra *c.* ½ or less wider than prothorax) (p. 444) ..... *nepos*
— Elytron with 2 striae well impressed (but 2nd abbreviated at ends) 7
7. Dorsal microsculpture present; elytra less than ½ wider than prothorax (p. 442) ..... *nadzab*
— Dorsal microsculpture absent or nearly so; elytra more than ½ wider than prothorax (p. 443) *fordi*
8. Pronotum with very distinct isodiametric microsculpture; form broader; color testaceous with brown median elytral fascia (p. 441) ..... *reticulatus*
— Pronotum with light or indistinct microsculpture; form narrower; elytra castaneous in most of basal ⅔, testaceous apically (p. 445) ..... *chimbu*

9. Elytron with 3 dorsal (including sutural) striae well impressed, *and* length less than 2 mm.; (color testaceous, elytral striae distinctly punctate) (p. 446) ..... *ceylanicus*
— Elytron usually with less than 3 striae well impressed; *or* if 3-striate, length more than 2 mm. 10
10. Elytron with 2 or 3 dorsal (including sutural) striae impressed at least in part 11
— Elytron usually with only 1 dorsal (the sutural) stria well impressed; other dorsal striae, if present, usually less impressed (in case of doubt, try this half of couplet first, then try preceding half if necessary) 15
11. Dorsal striae and also marginal (9th) stria irregularly punctate or subcrenate; form very robust and compact; (shining, dark, not spotted) (p. 446) ..... *crassus*
— Dorsal and marginal striae not distinctly punctate; form only moderately compact. 12
12. Elytra maculate or fasciate 13
— Elytra unicolorous 14
13. Elytron 2-striate with 3rd stria faint or absent (but if form is rather strongly convex, elytra as well as prothoracic disc virtually without microsculpture, and stria 8 very deep and bowed away from margin before middle, refer to couplet 19) ..... *pictus*
    13a. Paler: usually irregularly testaceous or reddish testaceous with elytral fascia and apices brown; pronotal microsculpture faint or absent (Papua) (p. 447) ..... (*pictus sensu stricto*)
    13b. Darker: reddish testaceous, elytra darker with 4 large pale maculae; pronotal microsculpture more distinct, forming vaguely circular patterns on each side of middle (N-E. N. G.) (p. 449) ..... (subsp. *pictoides*)
    13c. Still darker; piceous, elytra 4-maculate, the spots smaller; pronotal microsculpture as in 13b (Neth. N. G.) (p. 449) (subsp. *subpictus*)
    13d. Darkest: color much like 13c but with elytral spots smaller and the anterior ones obscure; microsculpture as in 13b, c (prothorax less broadly rounded on sides than on other subspecies) (Bismarck Range) (p. 450) ..... (subsp. *reductus*)
— Elytron usually 3-striate, but 3rd stria somewhat variable; (color reddish testaceous with elytral fascia etc. darker) (p. 450) ..... *trinervis*
14. Bicolored, head and prothorax reddish, elytra piceous (p. 451) ..... *divisus*
— Entirely piceous; etc. (p. 452) ..... *par*
15. Prothorax with sides very strongly sinuate well before base, subparallel (or diverging) in posterior 1/6 or 1/5, with basal angles more or less acute 16
— Prothorax with sides only moderately or slightly sinuate 17
16. Larger, length 2.9–3.2 mm. (see also description) (p. 453) ..... *psilus*
— Smaller, length 2.5–2.8 mm. (see also description and esp. notes under this species) (p. 454) ..... *psiloides*

17. Interval 8 narrow, not much wider than reflexed elytral margin . . 18
— Interval 8 wide, about 2X wide as reflexed elytral margin 19
18. Color dark rufous, not spotted (p. 455) . . . . . *milneanus*
— Color dark, elytra 4-maculate (p. 456) . . . . . *parapictus*
19. Sutural stria not quite entire at base; base of prothorax wider than head (base prothorax/head *c.* 1.16) (p. 457) . . . . . *subfumatus*
— Sutural stria entire at base, extending down basal declivity as a distinct fine line; base of prothorax not or scarcely wider than head (p. 458) . . . . . *fumatus*
20. Elytron with striae very irregularly spaced 21
— Elytron with 4 or more normally spaced dorsal striae 22
21. Elytron with parts of sutural and 3 additional dorsal striae, but latter all outside the dorsal punctures (2nd and 3rd striae presumably absent) (p. 460) . . . . . *submutatus*
— Elytron with parts of sutural and 1 additional dorsal stria, but latter about middle of elytral width (it is probably the 5th stria) (p. 461) *mutatus*
22. Elytron with 4 or 5 dorsal striae, but 5th stria (if present) usually less impressed and always much shorter than 4th (p. 462) . . . . *borneensis*
— Elytron with 5 or 6 dorsal striae, 5th about as well impressed and almost as long as 4th 23
23. Elytron with 5 dorsal striae 24
— Elytron with 6 dorsal striae 25
24. Dull (p. 463) . . . . . *aeneus*
— Shining (p. 464) . . . . . *nitens*
25. Not distinctly fusiform; basal sulcus of pronotum moderately impressed 26
— Fusiform; basal sulcus of pronotum usually very lightly impressed or obliterated 27
26. Very convex; shining; dark, elytra 2 maculate (p. 464) *bembidiiformis*
— Less convex; less shining; testaceous (p. 465) . . . . . *senarius*
27. Basal sulcus of pronotum slightly impressed, interrupted and with pore at middle (p. 466) . . . . . *papuae*
— Basal sulcus of pronotum slightly impressed or obsolete, variable but without pore at middle 28
28. Slightly narrower; moderately shining; base of pronotum not much roughened (p. 467) . . . . . *erotyloides*
— Slightly broader (see proportions in descriptions); very dull; base of pronotum subrugose (p. 467) . . . . . *fusiformis*

Tachys loriae Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 387, 389.

Description. A rather depressed, irregularly testaceous *Tachys* with general characters of *politus* group but with stria 8 of elytron interrupted at middle. See other characters given in

key, above. Proportions: head .78 and .76 width prothorax; prothoracic width/length 1.41 and 1.45, base/apex 1.16 and 1.14, base/head 1.00 and 1.00; width of elytra/prothorax 1.53 and 1.52. *Measurements:* length 2.2-2.7; width 0.8-1.1 mm.

Type. From "Ighibirei" (presumably south coast of **Papua**), July-Aug. 1890 (Loria, Genoa Civic Mus.).

Occurrence in New Guinea. **Papua**: 10, Milne Bay, Dec. 1943 (Darlington). **N-E. N. G.**: 15, Nadzab, July 1944 (Darlington); 5, Lae, Oct. 1944 (Darlington); 2, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.). **Neth. N. G.**: 1, Hollandia, July-Sept. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Nadzab.

Notes. This is, I think, a stream-side species, but I cannot give its exact habitat.

Tachys reticuloides n. sp.

Description. With characters of *politus* group as here defined. Slender and depressed within group; testaceous, with sutural area, median transverse fascia, and apices of elytra browner; rather dull, microsculpture distinct, isodiametric on front and pronotum, but with individual meshes less distinct and somewhat transverse on elytra. *Head* .82 and .81 width prothorax; eyes rather large and prominent (in group), genae forming *c.* right angles with neck; antennae with median segments nearly 2X long as wide, segments 2 and 3 subequal; frontal grooves short, shallow, subparallel. *Prothorax* subcordate; width/length 1.45 and 1.45; base/apex 1.11 and 1.20; base/head .96 and 1.00; sides broadly rounded anteriorly, sinuate well before basal angles; apex broadly emarginate but anterior angles not otherwise advanced; base subtruncate at middle, slightly oblique at sides; lateral margins narrow; basal angles slightly obtuse but well defined, subcarinate; disc rather depressed, with usual impression; basal sulcus rather shallow but entire and not distinctly crenate. *Elytra* rather elongate, about ½ wider than prothorax (E/P 1.48 and 1.53); margins rounded at humeri; each elytron with 3 discal striae rather irregularly impressed, and additional striae indicated; stria 8 rather narrowly interrupted before middle; 3rd stria with 2 dorsal punctures at about ⅓ and ⅔ of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; 2 segments each front tarsus ♂ distinctly dilated; last ventral segment scarcely visibly pubescent in ♀. *Measurements:* length 1.7-2.1; width *c.* 0.6-0.8 mm.

Types. Holotype ♂ (M.C.Z. No. 30,193) and 14 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington); and additional paratypes as follows. **Papua**: 9, Oro Bay (near Dobodura) Dec. 1943-Jan. 1944 (Darlington); 3, Kokoda, Apr. and July 1933 (Cheesman); 9, Milne Bay, Dec. 1943 (Darlington). **N-E. N. G.**: 19, Nadzab, July 1944 (Darlington); 3, Lae, Oct. 1944 (Darlington); 2 Stephansort and 1 Erima, Astrolabe Bay, 1898 and 1896 (Biró, Hungarian National Mus.); 5, Sambeang, Mongi Watershed, Huon Peninsula, 400 m. (*c.* 1,300 ft.), Apr. 21, 1955 (E. O. Wilson, M.C.Z.); 1, Chimbu Valley, Bismarck Range, 5000-7500 ft., Oct. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This new species seems rather closely related to *reticulatus*, below, but the present species is more slender, with relatively slightly larger head, and stria 8 of elytron distinctly interrupted.

Tachys reticulatus Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 387, 388.

Description. A moderately broad, not very convex, irregularly testaceous, dull member of *politus* group, with stria 8 lightly impressed and almost interrupted at middle. Proportions: head .77 and .78 width prothorax; prothoracic width/-length 1.48 and 1.44, base/apex 1.15 and 1.19, base/head 1.01 and 1.04; width elytra/prothorax 1.44 and 1.44. *Measurements:* length 2.0-2.2; width *c.* 0.8-0.9 mm.

Types. Described from 5 specimens from "Dilo" and 3 from "Kapakapa" (all collected by Loria). The actual type is in the Genoa Civic Mus.; "cotypes," in the British Mus. Kapakapa is on the south coast of **Papua**, southeast of Port Moresby. Dilo is probably in the same general area, but I have not located it exactly.

Occurrence in New Guinea. Apparently confined to **Papua**: besides cotypes, I have seen 31, Dobodura, Mar.-July 1944 (Darlington); and 12, Oro Bay, Dec. 1943-Jan. 1944 (Darlington).

Measured specimens. One pair (♂ ♀) from Dobodura.

Notes. I have compared a specimen from Dobodura with a Dilo "cotype" at the British Mus., and it agreed very well. This and the preceding species both occur at Dobodura, but whether they actually live together (beside running streams)

or in slightly different habitats I do not know. I did not distinguish them in the field.

Tachys nadzab n. sp.

Description. A rather slender, moderately convex member of *politus* group as here defined. Color irregularly testaceous with suture, median fascia, apices, and especially lateral margins of elytra browner; moderately shining, microsculpture rather faint, isodiametric on head and pronotum, more transverse on elytra. *Head* .78 and .79 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae with median segments slightly less than 2X long as wide, segments 2 and 3 subequal (or 3 slightly longer); frontal foveae rather short, moderately impressed. *Prothorax* subcordate; width/length 1.38 and 1.39; base/apex 1.19 and 1.20; base/head 1.04 and 1.02; sides broadly rounded through much of length, moderately sinuate before base; apex subtruncate with anterior angles not advanced; base subtruncate at middle, slightly oblique at sides; posterior angles slightly obtuse but distinct, carinate; disc with anterior impression almost obsolete, middle line normally impressed; basal sulcus moderately impressed, slightly or not crenate but interrupted and with a fovea at middle; basal area (behind sulcus) more strongly reticulate than disc of pronotum. *Elytra* less than ½ wider than prothorax (E/P 1.42 and 1.41); margins rounded at humeri; each elytron with 2 moderately impressed dorsal striae, additional striae faintly indicated; stria 8 entire but rather lightly impressed before middle, not bowed away from margin; 2 dorsal punctures on or near each 3rd stria behind basal ⅓ and before apical ⅔. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus scarcely dilated; last ventral not distinctly pubescent in either sex. *Measurements:* length 2.0-2.1; width *c.* 0.8 mm.

Types. Holotype ♂ (M.C.Z. No. 30,194) with 12 paratypes from Nadzab, **N-E. N. G.**, July 1944 (Darlington); 1 paratype from Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.); and 1 paratype from Lower Busu R., Huon Peninsula, May 12, 1955 (E. O. Wilson, M.C.Z.), taken in lowland rain forest.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Nadzab.

Notes. This species represents the beginning of transition from the more depressed *reticulatus* etc. toward the more convex form usual in the *politus* group. I think it lives by running water, but under just what circumstances I cannot say.

Tachys fordi n. sp.

Description. With characters of *politus* group as here defined. Form about average for group except head and prothorax relatively narrower and elytra wider than usual; rather convex; irregularly piceous or dark rufous, not spotted, legs testaceous, antennae and palpi irregularly brownish; shining, upper surface without reticulate microsculpture or virtually so. *Head* .79 and .75 width prothorax; eyes rather large and prominent, genae forming *c.* right angles with neck; antennae with median segments about 2X long as wide, segment 3 slightly longer than 2; frontal grooves short but deep. *Prothorax* transverse-subcordate; width/length 1.48 and 1.48; base/apex 1.18 and 1.18; base/head 1.00 and 1.02; sides rounded anteriorly, moderately sinuate toward base; apex broadly emarginate but anterior angles not otherwise advanced; base subtruncate, slightly oblique toward sides; lateral margins moderate; basal angles *c.* right, well defined, carinate; disc normally convex, with usual rather weak anterior transverse impression and longitudinal middle line; basal sulcus well impressed, not or slightly crenate, interrupted and with a conspicuous pore at middle. *Elytra* more than ½ wider than prothorax (E/P 1.62 and 1.58), subparallel at middle, with rounded humeri; each elytron with 2 well impressed striae, sutural one entire, 2nd much abbreviated at both ends; stria 8 entire and well impressed but not bowed away from margin; each 3rd interval with 2 well impressed dorsal punctures at or just before ⅓ and ⅔ of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; 2 segments each front tarsus ♂ slightly dilated. *Measurements:* length 2.7-3.1; width 1.1-1.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 5 paratypes (2 in M.C.Z. No. 30,309) all from Sepalakambang, Salawaket Range, **N-E. N. G.**, 1920 m. (*c.* 6240 ft.), Sept. 12, 1956 (E. J. Ford Jr., collector).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Although this species runs to near *nepos* and *nadzab* in the key to species (p. 437), I am not sure it is related. It may really be more closely related to *pictus* etc. However it is

distinguished from all these species by the relatively wide elytra in relation to prothorax, and from most of them also by the shining upper surface, without distinct reticulate microsculpture. Its habits are not recorded.

One specimen (the type) has an extra dorsal puncture on the third interval of the left elytron only, near the top of the declivity. This is presumably simply an abnormality.

Tachys nepos n. sp.

Description. With characters of *politus* group as here defined. Form about average, rather convex; testaceous, elytra darker with large posthumeral and smaller subapical pale spots; shining, almost without microsculpture dorsally. *Head* .80 and .76 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae rather stout (in group), median segments about 1½X long as wide, and segment 2 and 3 subequal; frontal grooves short, well impressed, almost punctiform. *Prothorax* subcordate; width/length 1.43 and 1.48; base/apex 1.16 and 1.18; base/head 1.02 and 1.06; sides arcuate then almost straight and converging behind middle, then rather broadly sinuate posteriorly; apex subtruncate with anterior angles not advanced; base subtruncate at middle, sinuate laterally; posterior angles well defined, obtuse or almost right, briefly carinate; disc rather strongly convex, impressed as usual; basal transverse sulcus well impressed, not distinctly crenate, but interrupted at middle and with median fovea. *Elytra* of moderate length, rather strongly convex, about ½ or less wider than prothorax (E/P 1.53 and 1.40); margins rounded at humeri; each elytron with sutural stria nearly entire and 2nd stria faintly indicated; stria 8 entire, rather deep, slightly bowed away from margin before middle; apical striole normal for group; 2 dorsal punctures on position of 3rd stria about ⅓ from base and behind middle. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with 2 segments each front tarsus scarcely dilated. *Measurements:* length 1.8-2.0; width *c.* 0.8 mm.

Types. Holotype ♂ (M.C.Z. No. 30,195) and 1 ♂ paratype both from Nadzab, **N-E. N. G.**, July 1944 (Darlington); and 1 additional paratype (sex?), Erima, Astrolabe Bay, 1896 (Biró, Hungarian National Mus.).

Measured specimens. The holotype and the paratype from Erima.

Notes. If this species is properly placed in the first half of couplet 2, it will key out easily (in preceding key), but if individuals should occur with relatively slightly narrower heads, they would go to the second half of couplet 2 and would probably run to near *subfumatus*, from which *nepos* differs in color, proportions, and size.

Tachys chimbu n. sp.

Description. With characters of slender member of *politus* group as here defined. Color reddish testaceous, head and most of basal ⅔ of elytra (and also extreme apices of elytra) darker, elytra with rather vague posthumeral spots and most of apical ⅓ pale; rather shining, microsculpture lightly impressed, isodiametric (when distinguishable) on front and pronotum, probably more transverse on disc of elytra (but individual meshes difficult to distinguish). *Head* wide (in group), .86 and .83 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae with median segments about 2X wide as long, segments 2 and 3 subequal; frontal foveae rather short, not sharply defined. *Prothorax* subcordate; width/length 1.38 and 1.38; base/apex 1.14 and 1.15; base/head .92 and .93; sides broadly rounded, then rather broadly sinuate before base; apex subtruncate with anterior angles not advanced; base subtruncate or slightly lobed at middle, slightly oblique or sinuate at sides; posterior angles well defined, slightly obtuse or almost right, very briefly or not carinate; disc rather weakly convex, with usual impressions; basal sulcus entire, not distinctly interrupted, or subinterrupted and subfoveate at middle. *Elytra* long, ½ or more wider than prothorax (E/P 1.51 and 1.56) margins rounded at humeri; elytron with 3 discal striae impressed at least in part, but other striae hardly indicated; stria 8 entire, not bowed away from margin; apical striole normal for group; 2 dorsal punctures on 3rd stria about ⅓ and ⅔ from base. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with first 2 segments front tarsus scarcely dilated; ♀ with very slight, short, sparse pubescence on last ventral barely visible at 54X. *Measurements:* length 2.0-2.4; width *c.* 0.8-0.9 mm.

Types. Holotype ♂ (M.C.Z. No. 30,196) and 24 paratypes all from Chimbu Valley, Bismarck Range, **N-E. N. G.**, Oct. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The specimens were taken in the open part of the valley, probably beside running water. The narrow form, relatively large head, coloration, and other characters given in the key make this an easily identified species.

Tachys ceylanicus (Nietner)

Nietner 1858, Ann. Mag. Nat. Hist. (3) **2**, p. 423 (*Bembidium*).
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 404, 436.
—— 1935, Fauna British India etc., Coleop., Carabidae **2**, pp. 246, 257.
Britton 1948, Proc. Hawaiian Ent. Soc. **13**, pp. 235, 239 (see this and preceding references for synonymy etc.).

Description (for recognition only). A small, testaceous species, of about average form and convexity (for *politus* group), with 3 dorsal striae impressed and punctate on each elytron, virtually no dorsal microsculpture, and other characters given in the key. *Inner wings* fully developed. Proportions of specimen from New Guinea: head .74 width prothorax; prothoracic width/length 1.38, base/apex 1.16, base/head 1.07; width elytra/prothorax 1.33. *Measurements:* length 1.9; width .75 mm.

Types. From Ceylon, in Berlin Zool. Mus. (seen by Andrewes). Synonyms of this species are based on specimens from Ceylon, "Ind. Or.," and Hawaii.

Occurrence in New Guinea. One ♀, Hollandia, **Neth. N. G.**, May 1945 (B. Malkin, U.S.N.M.).

Measured specimen. The Hollandia ♀.

Notes. According to Andrewes (1935), *ceylanicus* occurs from **Ceylon**, **India**, **Burma**, etc. to **Sumatra**, **Java**, **Celebes**, and the **Philippines**, and I have a series from Morotai Is. in the **Moluccas**, while the present record extends the species' range to New Guinea. It apparently occurs in debris in damp places on the ground, but I cannot define its habitat further. It is presumably introduced in Hawaii. Four specimens in the U.S.N.M. are labeled "alive in packing of palm seeds — Sidpor (nr. Calcutta) INDIA — Wash. D.C. Oct. 10, 1934 A27784."

Tachys crassus n. sp

Description. With characters of *politus* group as here defined. Very stout and convex; piceous, lateral margins of prothorax and elytra rufous, appendages irregularly testaceous-infuscate; shining, dorsal surface virtually without microsculpture. *Head* .67 and .70 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae rather

stout, median segments not much more than 1½X long as wide, segment 3 slightly longer than segment 2; front slightly depressed between eyes (or neck swollen); frontal grooves short but deeply impressed. *Prothorax* broadly subcordate; width/-length 1.57 and 1.48; base/apex 1.16 and 1.20; base/head 1.14 and 1.13; sides very strongly rounded anteriorly, broadly but not strongly sinuate before base; apex subtruncate, anterior angles not advanced; base subtruncate at middle, slightly sinuate or oblique at sides; lateral margins wide; posterior angles obtuse but distinct, carinate; disc very convex, with anterior transverse impression weak, middle line fine; basal transverse sulcus impressed, crenulate especially toward middle, with a conspicuous fovea at middle. *Elytra* very broad and convex, almost ½ wider than prothorax (exact measurement impossible because elytra slightly spread); margins rounded at humeri; each elytron with 2 discal striae impressed at least in part, punctate; 3rd stria faint; stria 8 entire, slightly bowed away from margin before middle; stria 9 (marginal stria) crenate; apical striole normal for group; two dorsal punctures on or inside of position of 3rd stria about basal ¼ and behind middle. *Inner wings* fully developed. *Lower surface*, *legs*, and *secondary sexual characters* (♂) normal; two basal segments each ♂ front tarsus very slightly dilated; ventral pubescence absent (in ♂). *Measurements:* length *c.* 2.4; width *c.* 1.15 mm.

Types. Holotype ♂ (M.C.Z. No. 30,197) and 1 ♂ paratype both from Chimbu Valley, Bismarck Range, **Neth. N. G.**, 5000-7500 ft., Oct. 1944 (Darlington).

Measured specimens. The types.

Notes. This species does not seem to be directly related to any other known in New Guinea. It occurred in generally open country, not forest, but I have no record of its exact habitat.

Tachys pictus Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 405, 439.
mediocris Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 405, 442 (new synonymy).

Description. With characters of *politus* group as here defined. Form of about average width and convexity; color irregular testaceous or brown, with median fascia and apices of elytra much darker (or elytra could be described as dark brown with four very large pale maculae); shining, microsculpture faint (isodiametric) on front, absent or virtually so on discs of

pronotum and elytra. *Head* .73 and .72 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae with median segments about 2X long as wide; segments 2 and 3 subequal; frontal grooves short, moderately impressed. *Prothorax* subcordate; width/length 1.41 and 1.39; base/apex 1.21 and 1.18; base/head 1.10 and 1.09; sides broadly rounded anteriorly, nearly straight and converging almost to base, then briefly sinuate; apex subtruncate or very broadly emarginate, with anterior angles not otherwise advanced; base irregularly subtruncate, very slightly oblique at sides; posterior angles *c.* right or slightly obtuse, carinate; disc moderately convex, with anterior transverse impression faint and middle line fine (as usual) and basal sulcus moderately impressed, at most faintly punctulate, interrupted at middle and with median fovea. *Elytra* less than ½ wider than prothorax (E/P 1.46 and 1.43); margins broadly rounded at humeri; each elytron with 2 dorsal striae well impressed at least in part, other dorsal striae faint or absent; stria 8 entire, rather deep, but not much bowed away from margin; apical striole normal for group. *Inner wings* fully developed. *Lower surfaee, legs,* and *seeondary sexual characters* normal: ♂ with 2 segments each front tarsus slightly dilated; ventral pubescence (if any) scarcely distinguishable at 54X. *Measurements:* length 2.4-2.9; width 1.0-1.2 mm.

Types. Of *pictus,* from Rigo, and of *mediocris,* from Kapakapa; both localities are on the south coast of **Papua**, southeast of Port Moresby; both types were collected by Loria, and both are in the Genoa Civic Mus. Cotypes of both species are in the British Mus., where I have examined them.

Occurrence in New Guinea. **Papua**: 48, Dobodura, Mar.-July 1944 (Darlington); 7 Oro Bay, Dec. 1943-July 1944 (Darlington); 2, Kokoda, Aug. 1933 (Cheesman); 29, Milne Bay, Dec. 1943 (Darlington). Other subspecies occur in **N-E. N. G.** and **Neth. N. G.** (see below). However 2 specimens in the series do not fit into my geographical classification. One, from Buna, Papua, Oct. 28, 1943 (W. B. Jones, borrowed from Dr. Manson Valentine), is within the geographical area of typical *pictus* but is darker than the latter, with smaller elytral spots and visible prothoracic microsculpture. The other, from Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington) has the characters of true *pictus* but is far outside the latter's Papuan range.

Measured speeimens. Two (♂ ♀) from Dobodura.

Notes. Andrewes did not compare his two species with each other, but he compared both with *poecilopterus*, and I have little doubt that they both represent the Papuan form of the present species, which varies somewhat (individually) in color and striation. The type localities of *pictus* and *mediocris* are close together, and both species are described as having "no microsculpture."

Tachys pictus pictoides n. subsp.

Description. Similar to typical *pictus* but slightly broader, darker, and with more distinct microsculpture: head and prothorax rather dark reddish, elytra piceous each with two rather large testaceous spots extending inward about to stria 2 and outward almost to margin. Microsculpture light but visible on front (isodiametric) and pronotum (somewhat transverse and tending to form circular patterns on each side), not distinct on disc of elytra but probably present as very fine transverse lines which tend to give surface a silky lustre in some lights. Proportions: head .72 and .74 width prothorax; prothoracic width/length 1.47 and 1.46, base/apex 1.26 and 1.23, base/head 1.13 and 1.09; width of elytra/prothorax 1.45 and 1.43. *Measurements:* length 2.4-2.7; width 1.1-1.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,198) and 32 paratypes from Nadzab, **N-E. N. G.**, July 1944 (Darlington). Also additional paratypes from **N-E. N. G.** as follows: 1, Lae, Oct. 1944 (Darlington); 1, lower Busu R., Huon Peninsula, Mar. 27, 1955, in lowland rain forest (E. O. Wilson #706, M.C.Z.); 1, Erima, Astrolabe Bay, 1896 (Biró, Hungarian National Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Nadzab.

Notes. Sufficiently compared with typical *pictus* in the preceding description.

Tachys pictus subpictus n. subsp.

Description. Similar to the preceding (*pictoides*) in structure and microsculpture, but differing in color: irregularly piceous, with especially head and prothorax darker than in preceding subspecies, and with elytral spots smaller, the anterior spots hardly extending inward to position of 3rd stria (posterior spots reach about 2nd stria), and neither spots reaching the margin. Proportions:: head/prothorax .74 and .75; prothoracic

width/length 1.47 and 1.48, base/apex 1.19 and 1.17, base/head 1.06 and 1.05; width elytra/prothorax 1.49 and 1.41. *Measurements:* length 2.7-3.0; width 1.1-1.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,199) and 12 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington); 1 paratype, Hollandia area, W. Sentani, Cyclops Mts., 50-100 m. (c. 150-325 ft.), June 22-24 (J. L. Gressitt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Hollandia.

Notes. Sufficiently compared (with *pietoides*) above. See also comparisons in description of following subspecies.

Tachys pictus reductus n. subsp.

Description. Generally similar to the two preceding subspecies but still darker, piceous or reddish piceous with anterior elytral spots vague (indicated by rather faint reddish areas rather than distinct blotches) and posterior spots small and sometimes vague too. Proportions: head .74 and .73 width prothorax; prothoracic width/length 1.45 and 1.44, base/apex 1.27 and 1.25, base/head 1.09 and 1.11; width elytra/prothorax 1.47 and 1.53. *Measurements:* length *c.* 3.0; width *c.* 1.25 mm.

Types. Holotype ♂ (M.C.Z. No. 30,200) and 11 paratypes all from Chimbu Valley, Bismarck Range, **N-E. N. G.**, Oct. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Comparison given above should be sufficient.

Tachys trinervis n. sp.

Description. With characters of *politus* group as here defined. Form about average for group, not strongly convex; testaceous or reddish testaceous with broad median elytral fascia and apices dark brown (or elytra could be described as dark brown with 4 very large pale maculae); rather shining, microsculpture faint on head (isodiametric) and pronotum (transverse, tending to form partly circular patterns on each side), not distinguishable at 54X on elytra. *Head* .71 and .71 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae with middle segments *c.* 2X long as wide; frontal grooves rather short, moderately impressed. *Prothorax* broadly subcordate; width/length 1.42 and 1.46; base/apex 1.27 and 1.27; base/head 1.12 and 1.16; sides broadly rounded

anteriorly, moderately sinuate posteriorly; apex subtruncate or very broadly emarginate, with anterior angles not otherwise advanced; base subtruncate, very slightly oblique at sides; posterior angles c. right, briefly carinate; disc with usual faint anterior transverse impression and fine median line; basal sulcus moderately impressed, finely crenate, interrupted at middle and with a median fovea. *Elytra* rather broad, width elytra/prothorax 1.43 and 1.42; margins rounded or faintly angulate at humeri; each elytron usually with 3 dorsal striae well impressed at least in part, but 3rd stria somewhat variable, and additional dorsal striae very faint or absent; stria 8 entire, only slightly bowed away from margin before middle; 2 dorsal punctures on or just inside 3rd stria just before ⅓ and ⅔ of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal: ♂ with 2 basal segments each front tarsus slightly dilated; ventral pubescence scarcely distinguishable at 54X. *Measurements:* 2.5-3.0; width 1.0-1.25 mm.

Types. Holotype ♂ (M.C.Z. No. 30,201) and 24 paratypes from Lae, **N-E. N. G.**, Oct. 1944 (Darlington); 1 additional paratype, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Lae.

Notes. This species is so much like *pictus* that I might consider it a subspecies if it were geographically isolated, but the occurrence of a form of *pictus* (*pictoides*) at Nadzab and Lae makes this treatment impossible. The 3-striate elytron distinguishes most specimens of *trinervis* from most specimens of all subspecies of *pictus,* and *trinervis* is also, on comparison, seen to be a slightly larger, slightly broader species with relatively slightly smaller head. And, as compared with *pictoides* (the subspecies of *pictus* with which *trinervis* occurs), *trinervis* is distinctly paler. I think the two species probably occur in different habitats (*i.e.*, beside different kinds of running streams), but I did not distinguish them in the field and cannot say just what the habitats are.

Tachys divisus n. sp.

Description. With characters of *politus* group as here described. Form about average for group; head and prothorax red,

elytra black, appendages testaceous; rather shining, microsculpture faint, isodiametric on front, slightly transverse and tending to form circular patterns on each side on pronotum, apparently composed of very fine transverse lines on elytra, making latter slightly iridescent. *Head* .73 and .73 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae rather slender, median segments at least 2X long as wide, segment 3 longer than segment 2; frontal foveae short, moderately impressed. *Prothorax* subcordate; width/length 1.45 and 1.45; base/apex 1.21 and 1.20; base/head 1.07 and 1.06; sides broadly rounded through much of length, rather broadly sinuate before base; apex subtruncate or slightly emarginate, with anterior angles not otherwise advanced; base subtruncate, slightly sinuate towards sides; posterior angles *c.* right, briefly carinate; disc moderately convex, with usual impressions; basal sulcus moderately deep, at most finely crenate, interrupted at middle and with a distinct fovea. *Elytra* of about average width and convexity; width of elytra/prothorax 1.59 and 1.51; margins broadly rounded at humeri; each elytron with 2 dorsal striae well impressed at least in part; stria 8 entire, not much bowed away from margins; each elytron with 2 dorsal punctures slightly more than ¼ and ½ from base, on position of 3rd stria. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ unknown; ♀ last ventral with traces of pubescence just visible at 54X. *Measurements:* length 2.8-2.9; width 1.2-1.3 mm.

Types. Holotype ♀ (M.C.Z. No. 30,202) and 2 (♀ ♀) paratypes all from Chimbu Valley, Bismarck Range, **N-E. N. G.**, 5000-7500 ft., Oct. 1944 (Darlington).

Measured specimens. The holotype and 1 paratype.

Notes. This is probably a member of the *pictus* subgroup, but it is immediately distinguished from all forms of *pictus* by coloration. Whether it is really a distinct species remains to be discovered.

Tachys par n. sp.

Description. With characters of *politus* group as here defined. Moderately stout and convex; piceous, not spotted, legs testaceous, antennae and mouthparts more brownish; moderately shining, meshes of microsculpture clearly visible (at 54X) only on clypeus and adjacent part of front, but probably formed of very fine transverse lines on pronotum and elytra, which are

somewhat iridescent. *Head* .74 width prothorax; eyes rather large and prominent (in group), genae forming *c.* right angles with neck; antennae with median segments about 2X long as wide (or slightly shorter), segment 3 very slightly longer than 2; frontal sulci short, moderately impressed, doubled; mentum not foveate. *Prothorax* transversely subcordate; width/length 1.48; base/apex 1.15; base/head 1.03; sides rounded anteriorly, almost straight and converging and slightly and broadly sinuate toward base; apex subtruncate with anterior angles not advanced; base subtruncate, slightly sinuate and slightly oblique at sides; posterior angles well defined but somewhat obtuse, scarcely carinate; disc rather strongly convex, with anterior transverse impression nearly obsolete, median line fine; basal sulcus rather lightly impressed, interrupted and with a small fovea at middle. *Elytra* about ⅓ wider than prothorax (E/P *c.* 1.36); margins rounded at humeri; each elytron with 2 dorsal striae impressed at least in part (2nd much abbreviated at both ends), but other dorsal striae not indicated; stria 8 entire, well impressed, somewhat bowed away from margin before middle; 2 dorsal punctures on or inside of position of 3rd stria rather close together, at about basal ⅓ and just behind middle of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* (♂) normal; 2 segments each front tarsus ♂ slightly dilated. *Measurements:* length 2.1; width 0.95 mm.

Type. Holotype ♂ (M.C.Z. No. 30,203) from Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington); unique.

Measured specimen. The type.

Notes. Characters given in the key will distinguish this species from any other in New Guinea. I do not know its exact relationships or habits.

Tachys psilus Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 403, 429.

Description (recognition characters only). A rather large, stout *Tachys* of the *politus* group, with sides of prothorax very strongly sinuate well before base, front with distinct isodiametric microsculpture at least anteriorly, color dark reddish piceous with elytra 4-maculate with pale, and only the sutural stria well impressed on each elytron although additional striae are indicated. Proportions: head .69 and .67 width prothorax: prothoracic width/length 1.44 and 1.46, base/apex 1.35 and 1.40, base/head 1.12 and 1.19; width elytra/ prothorax 1.42 and 1.47.

Measurements: length 2.9-3.2; width 1.25-1.4 mm. (Andrewes gives length as 2.75 mm.).

Types. Described from 3 examples from Rigo, southern **Papua** (L. Loria, Genoa Civic Mus.). The actual type, designated by Andrewes, is in the Genoa Civic Mus. A "cotype" is in the British Mus. where I examined it in 1947.

Occurrence in New Guinea. **Papua**: 16, Dobodura, Mar.-July 1944 (Darlington); 2, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 19, Milne Bay, Dec. 1943 (Darlington). **N-E. N. G.**: 13, Nadzab, July 1944 (Darlington); 14, Lae, Oct. 1944 (Darlington), and 1, same locality, sea level, July 24, 1955 (J. L. Gressitt, Bishop Mus.) taken in light trap.

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. This species is adequately defined above and in the key to species of the *politus* group. I believe it occurs in debris by running water. I have a series of it also from Cape Gloucester, **New Britain**, Jan.-Feb. 1944 (Darlington).

Tachys psiloides n. sp.

Description. With characters of *politus* groups as here defined. Rather stout and convex; irregular dark reddish or piceous, each elytron with post-humeral and subapical testaceous spots, appendages testaceous; shining, almost without dorsal microsculpture, but isodiametric meshes sometimes faintly visible on front. *Head* .69 and .68 width prothorax; eyes a little smaller and less prominent than usual in group, genae forming slightly obtuse angles with sides of neck; antennae with middle segments about 2X long as wide, segment 3 slightly longer than 2; front more or less impressed between eyes, and/or clypeus and adjacent part of front slightly swollen; frontal sulci short, well impressed, partly doubled. *Prothorax* subcordate; width/length 1.41 and 1.37; base/apex 1.36 and 1.35; base/head 1.16 and 1.21; sides rather strongly arcuate for ¾ or more of length, then strongly sinuate well before base and subparallel or slightly diverging to basal angles; apex subtruncate or slightly emarginate with anterior angles not otherwise advanced; base subtruncate; posterior angles on the acute side of right, with long carinae; basal transverse sulcus well impressed, not crenate, interrupted and with a conspicuous fovea at middle. *Elytra* wide and convex; width elytra/prothorax 1.49 and 1.53; margins rounded or faintly angulate at humeri; each elytron with 1 (sutural) discal stria impressed, additional striae less impressed or faintly

indicated; stria 8 entire, well impressed, slightly bowed away from margin before middle; 2 dorsal punctures on or inside (position of) 3rd stria behind ¼ and ½ elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal: 2 segments each front tarsus ♂ very slightly dilated; last ventral segment without visible pubescence at 54X. *Measurements:* length 2.5-2.8; width 1.1-1.25 mm.

Types. Holotype ♂ (M.C.Z. No. 30,204) and 10 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington), and additional paratypes as follows. **Papua**: 8, Milne Bay, Dec. 1943 (Darlington). **N-E. N. G.**: 2, Erima, 1896 (Biró, Hungarian National Mus.). **Neth. N. G.**: 6, Hollandia, July-Sept. 1944 (Darlington); 1, Maffin Bay, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This is probably related to the preceding species. It occurs at several of the same localities. It differs in being smaller, with front more impressed between eyes (or with clypeus more swollen), and with little or no distinct microsculpture on even anterior part of front. The present species and the preceding one (*psilus*) both occur at Cape Gloucester, **New Britain**. Whether the two differ in habits I do not know, for I did not distinguish them in the field.

Tachys milneanus n. sp.

Description. With characters of *politus* group as here defined. Form about average for group; nearly uniform rufous, elytra not spotted but with marginal gutters paler, legs testaceous, antennae slightly browner; microsculpture faint on head, not distinguishable on discs of pronotum and elytra but latter faintly iridescent. *Head* .71 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae with median segments about 2X long as wide, segment 3 slightly longer than segment 2; frontal impressions short, moderately impressed, diverging posteriorly, partly doubled. *Prothorax* transversely subcordate; width/length 1.45; base/apex 1.17; base/head 1.07; sides broadly rounded anteriorly, almost straight and converging posteriorly, scarcely sinuate before base; apex subtruncate or broadly emarginate with angles not otherwise advanced; base truncate at middle, slightly sinuate and slightly oblique at sides; basal angles obtuse but well defined, costate; disc moderately convex, with anterior transverse impression

almost obsolete, middle line fine; basal sulcus moderately impressed, finely crenate, almost interrupted at middle and with a median fovea. *Elytra* of about average width and convexity for group; width elytra/prothorax 1.40; margins rounded at humeri; sutural stria impressed and almost entire, additional discal striae faint; stria 8 entire but rather fine before middle, not much bowed away from margin; apical striole normal for group; each elytron with 2 dorsal punctures on or inside of position of 3rd stria behind ¼ and ½ of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* (♂) normal: each front tarsus ♂ with 2 segments at most very slightly dilated; no visible pubescence on ♂ last ventral segment. *Measurements:* length 2.2; width 0.95 mm.

Type. Holotype ♂ (M.C.Z. No. 30,205) from Milne Bay, Papua, Dec. 1943 (Darlington); unique.

Measured specimen. The type.

Notes. Except that each elytron is 1- (instead of 2-) striate, this species somewhat resembles *par*, because of the general form and uniform coloration, but I am not sure there is actually a relationship. The form of stria 8, shallower and less bowed away from the margin in this species than in *par*, suggests that it is not related.

Tachys parapictus n. sp.

Description. With characters of *politus* group as here defined. Form rather broad but not very convex (in group); reddish piceous, elytra 4-plagiate (each elytron with large posthumeral and large subapical testaceous blotches), legs testaceous, antennae slightly browner; moderately shining, microsculpture faint on front (isodiametric or slightly transverse) and disc of pronotum (more transverse and tending to form circular patterns on each side of pronotum), scarcely visible at 54X on elytra but probably present as very fine transverse lines which make elytra slightly iridescent. *Head* .69 and .70 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae with middle segments about 2X long as wide, segment 3 scarcely longer than 2; frontal grooves rather short, well impressed, parallel, vaguely doubled. *Prothorax* transversely subcordate; width/length 1.50 and 1.47; base/apex 1.19 and 1.18. base/head 1.10 and 1.09; sides broadly rounded anteriorly, nearly straight and converging posteriorly, then slightly or moderately sinuate before base; apex slightly

emarginate but anterior angles not otherwise advanced; base truncate at middle, sinuate at sides; lateral margins slightly broader than usual; posterior angles well defined, right or slightly obtuse, carinate; disc moderately convex, with usual faint anterior transverse impression and fine middle line; basal sulcus well impressed, at most faintly crenate, interrupted and with a fovea at middle. *Elytra* rather wide, moderately convex; width elytra/prothorax 1.49 and 1.47; margins rounded at humeri; sutural stria impressed for most of length, additional dorsal striae at most faintly indicated; stria 8 entire but fine at middle, not bowed away from margin; apical striole normal for group; 2 dorsal punctures about on position of 3rd stria a little less than ⅓ and ⅔ from base. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal; ♂ with two basal segments each front tarsus scarcely or not dilated; last ventral segments without visible pubescence in both sexes. *Measurements:* length 2.1-2.6; width 0.9-1.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,206) and 22 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington), and additional paratypes as follows: **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington); 18, Erima, Astrolabe Bay, 1896 (Biró, Hungarian National Mus.); 2, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Hollandia.

Notes. This species resembles and is probably related to *pictus* (described in preceding pages) but has 1-striate rather than 2-striate elytra and differs slightly in other ways. Both species occur in the vicinity of Huon Gulf (at Nadzab) and Astrolabe Bay. Both probably occur by running water, but I did not distinguish them in the field and cannot give their exact habitats.

Tachys subfumatus n. sp.

Description. With characters of *politus* group as here defined. Form about average for group, rather strongly convex; dark reddish or piceous, elytra 4-maculate (each elytron with moderate post-humeral and subapical testaceous blotches), appendages testaceous or brownish-testaceous; shining, almost without visible dorsal microsculpture. *Head* .68 and .67 width prothorax; eyes moderately large and prominent, genae forming right or slightly obtuse angles with neck; antennae with median segments about

1½X (less than 2X) long as wide, segment 3 longer than segment 2; front slightly impressed between eyes (or clypeus swollen), frontal foveae very short but deep. *Prothorax* transversely subcordate; width/length 1.46 and 1.46; base/apex 1.20 and 1.28; base/head 1.16 and 1.16; sides broadly arcuate in much of length, moderately sinuate before base; apex truncate with angles not advanced; base truncate, slightly oblique toward sides; lateral margins slightly wider than usual; posterior angles well defined, *c.* right, carinate, disc rather strongly convex, with anterior transverse impression almost obsolete, middle line fine; basal sulcus well impressed, rather finely crenate, interrupted and with fovea at middle. *Elytra* rather broad and strongly convex; width elytra/prothorax 1.41 and 1.39; margins rounded or at most faintly angulate at humeri; each elytron with sutural stria nearly entire and well impressed but not impressed on *basal* declivity; other dorsal striae faint or absent; stria 8 entire, deep, bowed away from margin before middle; 2 dorsal punctures on or inside position of 3rd stria slightly behind basal ¼ and middle of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal: ♂ with 2 segments each front tarsus at most slightly dilated; last ventral segment without visible pubescence in either sex (at 54X). *Measurements:* length 2.2-2.5; width *c.* 1.0-1.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,207) and 32 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington), and additional paratypes from **Papua** as follows: 2, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); and 1, Milne Bay, Dec. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. Sufficiently distinguished from other species that occur in New Guinea in the key to species of the *politus* group. Occasional specimens of this species, including the one from Erima listed above, have the second discal stria impressed on the elytron, but these specimens should key out on characters given in parentheses in the first part of couplet 13.

Tachys fumatus n. sp.

?deliciolus Sloane 1921, Proc. Linn. Soc. New South Wales **46**, p. 202 (not *deliciolus* Bates).

Description. With characters of *politus* group as here defined. Form about average for group but rather strongly convex; dark

reddish piceous, elytra 4-maculate (each elytron with a rather small post-humeral and slightly larger subapical testaceous spot), appendages testaceous; reticulate microsculpture not distinguishable dorsally but probably present at least on elytra as very fine transverse lines, for elytra slightly irideseent. *Head* .73 and .72 width prothorax; eyes rather large and prominent, genae forming *c.* right angles with neck; antennae with middle segments about 2X (or slightly less) long as wide, segment 3 slightly longer than 2; front impressed between eyes (or elypeus swollen); frontal sulei linear, well impressed, slightly diverging posteriorly, doubled, but not extending onto clypeus. *Prothorax* subeordate; width/length 1.47 and 1.45; base/apex 1.14 and 1.18; base/head 1.00 and 1.02; sides strongly rounded anteriorly, moderately and rather broadly sinuate before base; lateral margins rather wide (in group); apex subtruneate or broadly emarginate but angles not otherwise advanced; base subtruneate; posterior angles well defined, right or slightly obtuse, carinate; dise rather strongly convex, with anterior transverse impression almost obsolete, middle line very fine; basal sulcus impressed and finely crenate at sides, rather broadly interrupted at middle and with a somewhat variable fovea at middle. *Elytra* rather short, broad, and very convex; width elytra/prothorax 1.36 and 1.38; margins rounded or obtusely angulate at humeri; sutural stria entire, reaching extreme base; additional dorsal striae much lighter or faint or absent; stria 8 entire, deep, bowed away from margin before middle; 2 dorsal punctures on each elytron on or inside position of 3rd stria not much behind basal ¼ and middle of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal: ♂ with 1st two segments each front tarsus moderately dilated, wider than usual in group; no distinct pubescence on last segment in either sex. *Measurements:* length 2.1-2.7; width 0.9-1.15 mm.

Types. Holotype ♂ (M.C.Z. No. 30,208) and 9 paratypes from Dobodura, **Papua**, Mar.- July 1944 (Darlington), and additional paratypes as follows. **Papua**: 4, Oro Bay, Dec. 1943-Jan. 1944 (Darlington). **N-E. N. G.**: 9, Lae, Oct. 1944 (Darlington); 6, Seleo, 1896 (Biró, Hungarian National Mus.); 1, Madang ("Friedrich-Wilh.-hafen"), 1900 (Biró, Hungarian National Mus.). **Neth. N. G.**: 7, Hollandia, July-Sept. 1944 (Darlington); 10, Maffin Bay, Aug. 1944 (Darlington), and 1, same locality, Sept. 1944 (E. S. Ross, California Aead.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species is deceptively similar to *fumicatus* (p. 469) but is instantly distinguished by the much shorter frontal foveae. It probably occurs in wet places, but I did not distinguish it from *fumicatus* in the field and cannot give its exact habitat. It may (or may not) be the species casually mentioned from New Guinea by Sloane (*loc. cit.*) as *deliciolus* Bates (= *poecilopterus* Bates). It is apparently not closely related to any Australian species.

Tachys submutatus n. sp.

Description. With characters of *politus* group as here defined. Form about average for group except elytra a little more narrowed posteriorly, rather strongly convex; black or nearly so, elytra bimaculate (each elytron with a rather small clear spot near top of posterior declivity), appendages testaceous; shining, dorsal microsculpture not distinguishable. *Head* .74 and .71 width prothorax; eyes moderately large and prominent, genae forming right or slightly obtuse angles with neck; antennae with middle segments 2X or more longer than wide, segment 3 slightly longer than 2; front impressed between eyes; frontal sulci rather short, sharply impressed, slightly diverging posteriorly, doubled. *Prothorax* subcordate; width/length 1.24 and 1.27; base/apex 1.25 and 1.25; base/head 1.03 and 1.08; sides broadly rounded anteriorly, oblique and converging posteriorly, slightly sinuate before base; apex truncate with angles not advanced; base subtruncate at middle, slightly oblique at sides; posterior angles distinct but slightly blunted, obtuse; disc strongly convex with anterior transverse impression obsolete, middle line fine; basal sulcus moderately impressed, entire, crenate, but without obviously differentiated median fovea. *Elytra* more than ⅓ wider than prothorax (E/P 1.38 and 1.35), widest not far behind humeri, slightly tapering posteriorly; margins broadly rounded but slightly obtusely angulate at humeri; each elytron with sutural stria impressed posteriorly (but obsolete or nearly so before middle) and with parts of three additional discal striae well impressed but abbreviated anteriorly and posteriorly, the striae apparently being numbers 4, 5, and 6 (striae 2 and 3 apparently obsolete); stria 8 entire, very deep, bowed away from margin before middle; 2 dorsal punctures on each elytron in smooth space betwen sutural and

presumed 4th striae about ⅓ from base and just behind middle of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal for group: ♂ with 2 segments each front tarsus scarcely dilated; last ventral segment without visible pubescence in both sexes. *Measurements:* length 2.6-3.0; width 1.0-1.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,209) and 4 paratypes from Nadzab, **N-E. N. G.**, July 1944 (Darlington); 1 paratype, Chimbu Valley, Bismarck Range, **N-E. N. G.**, 5000-7500 ft., Oct. 1944 (Darlington); and 1 paratype, Dobodura, **Papua**, Mar.-July 1944 (Darlington).

Measured specimens. The ♂ holotype and the (♀) paratype from Dobodura.

Notes. This is an outstandingly distinct species because of the irregularly spaced elytral striae. It is related only to the following one, so far as I know.

Tachys mutatus n. sp.

Description. With characters of *politus* group as here defined. Form about average for group, but very convex; black or reddish black, elytra bimaculate (each elytron with a testaceous spot near top of declivity), appendages testaceous; shining, without detectable dorsal microsculpture. *Head* .72 and .70 width prothorax; eyes not quite so large as in preceding species, genae forming slightly obtuse angles wih neck; mandibles a little longer and less curved than usual in group; antennae with middle segments about 2X long as wide; front scarcely impressed across middle, with foveae rather well impressed, sublinear, slightly diverging posteriorly, not distinctly doubled. *Prothorax* subcordate; width/length 1.27 and 1.28; base/apex 1.27 and 1.27; base/head 1.07 and 1.09; sides rather broadly rounded through much of length, moderately sinuate before base; apex truncate with angles not advanced; base subtruncate, slightly oblique at sides; posterior angles almost right (slightly obtuse), carinate, disc very convex, with anterior transverse impression and middle line almost obsolete; basal sulcus entire, well impressed, crenate, but not interrupted at middle and without differentiated median fovea. *Elytra* more than ⅓ wider than prothorax (E/P 1.40 and 1.36), a little less tapering than in preceding species; margins slightly (obtusely) angulate at humeri; each elytron with sutural stria impressed posteriorly,

obsolete in about anterior ⅓, and part of 1 additional *outer* dorsal stria (probably the 5th) well impressed except abbreviated anteriorly and much more so posteriorly; stria 8 entire, very deep, bowed away from margin before middle; 2 dorsal punctures in smooth area near or inside of position of (obsolete) 3rd stria behind basal ¼ and middle of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal: ♂ with first 2 segments each front tarsus slightly if at all dilated; last ventral segment without distinguishable pubescence in both sexes. *Measurements:* length 2.5-2.8; width 1.0-1.15 mm.

Types. Holotype ♂ (M.C.Z. No. 30,210) from Dobodura, **Papua**, Mar.-July 1944 (Darlington), and additional paratypes as follows: **Papua**: 1, Milne Bay, Dec. 1943 (Darlington). **N-E. N. G.**: 2, Nadzab, July 1944 (Darlington); 1, Chimbu Valley, Bismarck Range, 5000-7500 ft., Oct. 1944 (Darlington); 3, Sattelberg, 1899 (Biró, Hungarian National Mus.).

Measured specimens. The ♂ holotype from Dobodura and 1 ♀ paratype from Nadzab.

Notes. This is another very distinct species, comparable only with the preceding one, from which it differs in further reduction of the elytral striation, slightly less tapering elytra, etc.

Tachys borneensis Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 401, 418.

Description (for recognition only). A moderately broad, rather depressed member of *politus* group; each elytron with 4 discal (incl. sutural) striae well impressed at least in part; 5th stria sometimes impressed, but if so, much shorter than 4th; color dark brown, not spotted, legs testaceous, palpi and most of antennal segments brown; microsculpture distinct and isodiametric on front, fainter and more transverse and tending to form circular patterns on each side on pronotum, very fine and transverse on elytra. Proportions of specimen from New Guinea: head .73 width prothorax; prothoracic width/length 1.46, base/apex 1.24, base/head 1.16; width elytra/prothorax 1.41. *Measurements:* length *c.* 3.1; width *c.* 1.2 mm.

Types. The type is from Borneo in the Andrewes collection, British Mus. Additional "cotypes" were from Borneo and New Guinea, the latter from Dilo on the south coast of **Papua** (Loria, Genoa Civic Mus. and British Mus.).

Occurrence in New Guinea. Known from New Guinea only by the Dilo specimens collected by Loria and by 1 specimen from Kiunga, Fly R., **Papua**, July 11-14, 1957 (W. W. Brandt, Bishop Mus.).

Measured specimen. A ♀ from Dilo in the British Mus.

Notes. The 4 regularly spaced, impressed striae on each elytron, with the 5th stria absent or relatively short, distinguish this species from all others of the group known in New Guinea.

Tachys aeneus Putzeys

Putzeys 1875, Ann. Mus. Civ. Genova (Genoa) **7**, p. 744.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 401, 417.
biplagiatus Jordan (not Dejean) 1894, Novitates Zoologicae **1**, p. 112.
jordani Csiki 1928, Coleop. Cat., Carabidae, Harpalinae **1**, p. 167.

Description (for recognition only). A moderately stout and convex, rather dull member of *politus* group, with 5 sharply impressed but (excepting the sutural) abbreviated striae on each elytron. Proportions: head .66 and .66 width prothorax; prothoracic width/length 1.47 and 1.47, base/apex 1.29 and 1.32, base/head 1.28 and 1.29; width elytra/prothorax 1.32 and 1.32. *Measurements:* length 2.6-3.1; width 1.1-1.3 mm.

Types. Of *aeneus*, from "Macassar" (Celebes), in Genoa Civic Mus. (seen by Andrewes); of *biplagiatus*, from "Tenimber," in Oberthür collection, now at Paris Mus. (also seen by Andrewes); of *jordani*, as for *biplagiatus* (the name *jordani* replaces *biplagiatus* Jordan, which is preoccupied).

Occurrence in New Guinea. **Papua**: 16, Dobodura, Mar.-July 1944 (Darlington). **N-E. N. G.**: 5, Nadzab, July 1944 (Darlington); 1, Ebabaang, Mongi Watershed, Huon Peninsula, 1300-1400 m. (*c.* 4225-4500 ft.), Apr. 16-18, 1955 (E. O. Wilson, M.C.Z.); 1, Chimbu Valley, Bismarck Range, 5000-7500 ft., Oct. 1944 (Darlington); 94, Sattelberg, Huon Peninsula, 1899 (Biró, Hungarian National Mus.); 1, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.). **Neth. N. G.**: 43, Hollandia, July-Sept. 1944 (Darlington); 5, same locality, Apr. and May 1945 (Malkin, U.S.N.M.); 1, Maffin Bay, Aug. 1944 (Darlington); 5, Biak Is., Oct. 1944 (Darlington); 1, Sansapor, Aug. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. This easily recognized species is very common in an unusual habitat for *Tachys*, on *dry* ground in more or less open places, under debris etc. All the numerous specimens before

me from Papua and N-E. N. G. are bimaculate, and so are most of those from Neth. N. G., but 2 specimens in the Hollandia series and 1 from Biak Is. and the 1 from Maffin Bay lack elytral spots. Outside of New Guinea, the species is known from Morotai Is. in the **Moluccas** (Darlington, M.C.Z.), **Celebes**, **Tanimbar**, **Wetar**, and **Sumbawa**.

Tachys nitens Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 401, 412.

Description (for recognition only). A stout, compact, very convex member of the *politus* group; black, elytra bimaculate (a clear spot near top of declivity of each elytron); 5 dorsal striae sharply impressed on each elytron (but all except sutural abbreviated anteriorly and posteriorly). Proportions: head .69 and .67 width prothorax; prothoracic width/length 1.44 and 1.48; base/apex 1.35 and 1.28; base/head 1.15 and 1.18; width elytra/prothorax 1.33 and 1.33. *Measurements:* length 2.6-2.7; width 1.15-1.25 mm. (Andrewes gives length as 2.75 mm.).

Type. A ♂ from Dilo, south coast of **Papua** (Loria, Genoa Civic Mus.).

Occurrence in New Guinea. The type is the only specimen known from **Papua**. From **N-E. N. G.** I have seen 1, Nadzab, July 1944 (Darlington), and 1, Lae, Oct. 1944 (Darlington); and from **Neth. N. G.** 1, Hollandia, Nov. 1944 (H. Hoogstraal, M.C.Z.).

Measured specimens. A pair, ♂ ♀, from Hollandia and Lae, respectively.

Notes. Although I have not seen the type of this species, it is easily recognizable from description.

Tachys bembidiiformis Jordan

Jordan 1894, Novitates Zoologicae **1**, p. 111.

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 401, 412.

Louwerens 1953, Verhandlungen, Naturforschenden Gesellschaft Basel **64**, p. 305.

helmsi Sloane 1898, Proc. Linn. Soc. New South Wales **23**, p. 476.

—— 1921, Proc. Linn. Soc. New South Wales **46**, pp. 198, 202.

Description (for recognition only). A rather broad, strongly convex, "compact" member of the *politus* group (but with prothorax rather narrow); strongly shining, black or reddish piceous with small subapical elytral spots and appendages testaceous; each elytron with 6 strongly impressed but incomplete

striae. Proportions: head .72 and .74 width prothorax; prothoracic width/length 1.18 and 1.19, base/apex 1.16 and 1.16, base head 1.00 and .97; width elytra/prothorax 1.51 and 1.48. *Measurements:* length 2.8-3.1; width 1.2-1.3 mm.

Types. Of *bembidiiformis*, from "Tenimber," in Oberthür collection, now at Paris Mus.; of *helmsi*, from Upper Ord R., Western Australia, in the Lea collection, now in South Australian Mus. at Adelaide.

Occurrence in New Guinea. Known only from southern **Papua**: 3, Port Moresby, Oct. 1944 (Darlington).

Measured specimens. Two ♀ ♀ from Port Moresby.

Notes. This is another easily recognized species. It is known to occur in **Java**, **Andonare Is.**, **Sumba**, **Tanimbar**, the **Philippines**, Morotai Is. in the **Moluccas** (1 specimen, Sept. 1944, Darlington), and across northern **Australia** including Cape York, as well as in **New Guinea**. It apparently inhabits wet places in more or less open country.

Tachys senarius n. sp.

Description. With characters of *politus* group as here defined. Form about average for group but less convex than usual; testaceous, sutural area etc. darker posteriorly; moderately shining, microsculpture distinct on front especially anteriorly (almost isodiametric), on pronotum (isodiametric or slightly transverse), and elytra (finer and more transverse). *Head* .73 and .71 width prothorax; eyes rather large and prominent, genae forming *c.* right angles with neck; antennae with middle segments about 2X (or slightly more) long as wide, segment 3 scarcely longer than segment 2; frontal grooves rather long, moderately impressed, subparallel. *Prothorax* transverse, width/length 1.43 and 1.46; base/apex 1.23 and 1.20; base/head 1.10 and 1.09; sides broadly rounded anteriorly, converging posteriorly, very briefly sinuate before base; apex subtruncate or very broadly emarginate with angles not otherwise advanced; base subtruncate, slightly sinuate toward sides; posterior angles obtuse or minutely right, with long carinae; lateral margins slightly wider than usual; disc only moderately convex, with anterior transverse impression almost obsolete, middle line fine, basal sulcus moderately impressed, finely crenate, interrupted and with a fovea at middle. *Elytra* of about average width, more than ⅓ wider than prothorax (E/P 1.40 and 1.37), not strongly convex, widest not far behind humeri, then slightly tapering

posteriorly; margins rounded or faintly subangulate at humeri; each elytron with 6 faintly irregular or subpunctulate dorsal striae impressed at least in part, but all except sutural abbreviated anteriorly as well as posteriorly; stria 8 entire, deep, somewhat bowed away from margin before middle; apical striole normal for group; 2 dorsal punctures inside 3rd stria before ⅓ and ⅔ of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal: ♂ with first two segments each front tarsus at most slightly dilated; ♀ with a little very short, sparse, inconspicuous pubescence barely visible at 54X on last ventral segment. *Measurements:* length 2.7-2.9; width 1.05-1.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,211) and 3 paratypes all from Nadzab, **N-E. N. G.**, July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Although it is very distinct, this species forms a sort of transition between *bornecnsis* (and perhaps *reticulatus* etc.) on one hand and *aeneus, papuae*, etc. on the other, but I am not sure this indicates a real relationship.

Tachys papuae Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 402, 421.

Description (for recognition only). A rather elongate, probably subfusiform member of the *politus* group, similar to *erotyloides* and *fusiformis* but with basal sulcus of pronotum not only impressed (shallowly) and crenulate but also interrupted and with a fovea at middle. It is (like the other species just named) dark aeneous with legs and small subapical elytral spots pale and antennae pale at base and fuscous externally. *Measurements* (*t.* Andrewes): length 3.0 mm.; width not given.

Types. "Type" from Fly R., (southern **Papua**) (L. M. D'Albertis, Genoa Civic Mus.); a "cotype" from Dilo, south coast of **Papua**, (Loria, British Mus.).

Occurrence in New Guinea. Known only from the types. I saw the cotype in 1957, but have seen no other specimens of the species.

Measured specimens. None.

Notes. See key, and comparative remarks under preceding species.

Tachys erotyloides Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 402, 419.

Description (for recognition only). A rather slender, subfusiform, 2-maculate, 6-striate member of the *politus* group, with prothorax rather narrow basally (compared with the following species) and with basal sulcus scarcely impressed, without median fovea, but indicated by a row of small punctures which may or may not be widely interrupted at middle. Proportions: head .65 and .63 width prothorax; prothoracic width/length 1.27 and 1.30, base/apex 1.31 and 1.34, base/head 1.25 and 1.33; width elytra/prothorax 1.27 and 1.20. *Measurements:* length 3.3-3.8; width 1.15-1.4 mm. (Andrewes gives length as 3.0-3.4 mm.).

Types. A "type" and 5 "other examples" (presumably considered "cotypes" by Andrewes), all from Dilo, south coast of **Papua** (Loria); type in Andrewes collection, British Mus., where I have seen it; other examples in Genoa Civic Mus.

Occurrence in New Guinea. **Papua**: 3, Dobodura, Mar.-July 1944 (Darlington). **N-E. N. G.** 42, Nadzab, July 1944 (Darlington); 4, Lae, Oct. 1944 (Darlington); 5, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.); 1, Chimbu Valley, Bismarck Range, 5000-7500 ft., Oct. 1944 (Darlington). **Neth. N. G.**: 1, Hollandia, May 1945 (Malkin, U.S.N.M.); 1, Sabron, Camp 1, 1200 ft., May 15, 1936 (Cheesman, British Mus.).

Measured specimens. A pair (♂ ♀) from Nadzab.

Notes. This species usually occurs on gravelly or sandy banks of rivers.

Tachys fusiformis Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 402, 420.

Description (for recognition only). Another subfusiform, 2-maculate, 6-striate *Tachys* of the *politus* group, a little more depressed, duller, with wider prothoracic base than *erotyloides*, with basal sulcus of pronotum even more obliterated. Proportions: head .65 and .63 width prothorax; prothoracic width/length 1.37 and 1.37, base/apex 1.33 and 1.34, base/head 1.35 and 1.38; elytral width/prothorax 1.37 and 1.35. *Measurements:* length 3.6-4.0; width 1.5-1.65 mm. (Andrewes gives length as 3.5 mm.).

Type. A ♀ from Dilo, south coast of **Papua** (Loria, Genoa Civic Mus.).

Occurrence in New Guinea. **N-E. N. G.**: 22, Nadzab, July 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Nadzab.

Notes. I have not seen the type; my specimens are identified from description. They were taken on the banks of the Markham R.

Tachys fumicatus Group

Tachys fumicatus and its immediate allies have the general characters of the *politus* group except that the frontal sulci, which are linear, deep, and strongly converging anteriorly, are very long, extending across the clypeus; and the labrum is deeply emarginate. If *fumicatus* and its allies were included in the *politus* group, they would be notable also for their rather short antennae; posterior angles of prothorax almost without carinae; basal sulcus of pronotum moderately impressed, slightly interrupted at middle, and with a rather small fovea at middle; elytron with usually 2 discal striae well impressed (2nd abbreviated at both ends and sometimes less impressed than 1st) and stria 8 entire, very deep, and bowed away from margin before middle. The clypeus as well as the labrum appears deeply emarginate in some individuals, but this is partly a matter of change of pigmentation rather than change of structure: the edge of the clypeus at middle tends to be depigmented, transparent, and therefore apparently emarginate except in carefully adjusted lighting.

The typical species of the group is *Tachys fumicatus* Motschulsky, which is very widely distributed, occurring across southern Asia and in Africa, north to Japan, and east and south to the Philippines and New Guinea, and *fumicatus* is considered closely allied to *haemorrhoidalis* Dejean of Europe and to *curticollis* Sloane of Australia etc. Throughout much of its range *fumicatus* is the only species of its group, but *curticollis* overlaps it geographically on New Guinea and adjacent islands, and *Tachys fumatus* (described above, p. 458), which too is widely distributed in New Guinea, may (or may not) be related in spite of its shorter frontal sulci. The occurrence together of these three superficially similar species, which differ most obviously in form of frontal sulci (they differ slightly in other ways too), might be the result of a triple invasion of New Guinea. If so, *fumatus*, with deep but still short frontal sulci, presumably reached New Guinea first and may represent the

ancestral stock. The latter, in southern Asia, may then have evolved longer frontal sulci and emarginate labrum and reinvaded New Guinea, first as *curticollis*, which may be an intermediate-ancestral type, and then as *fumicatus*. Or a still broader pattern of evolution and dispersal may be indicated. *Tachys haemorrhoidalis* of Europe and *curticollis* of Australia etc. are so similar that Sloane considered them forms of one species. They may represent a stock which formerly extended from Europe to Australia but has interrupted its own continuity of distribution by evolving as *fumicatus* in southern Asia. If this has happened, it is an example of "centrifugal speciation" (W. L. Brown 1957, *Quarterly Review Biol.* **32**, pp. 247-277). It is also possible that the three species *fumatus*, *curticollis*, and *fumicatus* differentiated on New Guinea, but the wide distribution of all three species on the island, and the whole broad pattern of their distribution elsewhere, seem to argue against this. All these species probably live in wet places, but I did not distinguish them in the field and cannot say whether their habitats are different. The modification of the labrum etc. suggests some change of food or habits that may account for the success of the *fumicatus* stock. The distribution and ecology of the species of this group, and if possible their evolutionary history, should be fascinating subjects for investigation.

Key to Tachys of fumicatus Group of New Guinea

1. Frontal sulci extending backward as finely impressed lines to or behind level of posterior edges of eyes (p. 469) . . . . . *fumicatus*
— Frontal sulci ending posteriorly rather abruptly, between eyes (and see notes under this species) (p. 471) . . . . . *curticollis*

Tachys fumicatus Motschulsky

Motschulsky 1851, Bull. Soc. Nat. Moscou **24**, Part 2, No. 4, p. 509.
geminatus Schaum 1860, Berliner Ent. Zeits. **4**, p. 200.
putzeysi Dupuis 1913, Ann. Soc. Ent. Belgique **57**, p. 427.
fumigatus Auct.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 466, 468.
—— 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 287, fig. 48.

Description (for recognition only). A rather small, convex *Tachys*, with characters of *politus* group except for long, linear, converging frontal sulci that extend forward across clypeus. Color piceous to reddish with elytra either 2- or 4-spotted with pale: a subapical spot always present on each elytron; posthumeral spots present or absent (see notes below). Proportions:

head .79 and .77 width prothorax; prothoracic width/length 1.37 and 1.37, base/apex 1.11 and 1.17, base/head .96 and .98; width elytra/prothorax 1.35 and 1.36. *Measurements:* length 1.9-2.3; width 0.8-0.95 mm.

Types. Of *fumicatus*, from "Ind. or," in Moscow University Mus.; of *geminatus*, from Celebes (Wallace), in Deutsche Ent. Mus.; of *putzeysi*, also from Celebes, present location of type(s) unknown.

Occurrence in New Guinea. **Papua**: 6, Milne Bay, Dec. 1943 (Darlington); 4, Port Moresby, Oct. 1944 (Darlington); 11, Dobodura, Mar.-July 1944 (Darlington); 7, Oro Bay, Dec. 1943-Jan. 1944 (Darlington). **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington); 1, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.); 2, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 57, Hollandia, July-Sept. 1944 (Darlington); 2, same locality, May and June 1945 (Malkin, U.S.N.M.); 5, same locality, Feb. and May 1945 (Hoogstraal, Chicago Mus.); 2, Maffin Bay, Sept. 1944 (E. S. Ross, California Acad.); 1, Sansapor, Aug. 1944 (Darlington).

Measured specimens. One pair (♂ ♀) from Hollandia.

Notes. This species is easily recognized by characters given for the group and in the preceding brief specific description. It is distinguished from *curticollis* (below) as described thereunder. It is very common from **Ceylon** and **India** north to **Japan** and east and south to the **Philippines** and **New Guinea**, but not Australia. It occurs also in **Africa**.

It is usually said that typical *fumicatus* is 2-spotted and occurs mainly in southern Asia etc., and that "variety" *geminatus* is 4-spotted and occurs mainly in the Malay Archipelago, but this is an over-simplification. For one thing, *fumicatus* was originally described as 4-spotted. For another, the spotting varies individually in many localities. In New Guinea, for example, the 4 specimens of *fumicatus* from Port Moresby are essentially 2-spotted, with posthumeral spots absent or faint; the 6 from Milne Bay are intermediate, with posthumeral spots indicated but sometimes faint; 18 from Dobodura and Oro Bay, variable, 2-spotted or 4-spotted or intermediate; 4 from localities in N-E. N. G., strictly 2-spotted; 63 from Hollandia, mostly 2-spotted, but 8 specimens 4-spotted or intermediate; 2 from Maffin Bay, 2-spotted; and 1 from Sansapor, 4-spotted. It should be added that 3 specimens from Cape Gloucester, **New Britain**, are all distinctly 4-spotted, and specimens from Morotai

Is. in the **Moluccas** are usually 4-spotted, with anterior spots often very large.

A specimen of this species in the U.S.N.M. is labeled "in packing on orchids from P. I. [Philippine Islands] at Honolulu Hawaii, Apr. 13, 1932, #4227."

Tachys curticollis Sloane

Sloane 1896, Proc. Linn. Soc. New South Wales **21**, pp. 357, 363.
haemorrhoidalis var. *curticollis* Sloane 1921, Proc. Linn. Soc. New South Wales **46**, pp. 195, 198, 203.

Description. None required here. See notes below. Proportions: head .79 and .78 width prothorax; prothoracic width/-length 1.35 and 1.39, base/apex 1.14 and 1.11, base/head 1.00 and .98; width elytra/prothorax 1.40 and 1.44. *Measurements:* length 2.2-2.5; width 0.9-1.1 mm.

Types. Described from Tweed R. and Cootamundra District, New South Wales, Australia; the actual type is from the second locality, and is in the Sloane collection at Canberra.

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.-July 1944 (Darlington); 3, Oro Bay, Dec. 1943-Jan. 1944 (Darlington). **N-E. N. G.**: 3, Nadzab, July 1944 (Darlington); 3, Lae, Oct. 1944 (Darlington); 4, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 39, Hollandia, July-Sept. 1944 (Darlington); 10, Maffin Bay, Aug. 1944 (Darlington), and 1, same locality, Aug. 1944 (E. S. Ross, California Acad.); 5, Sansapor, Aug. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Hollandia.

Notes. Although this species is very close to *fumicatus*, and is most easily separated by a rather slight difference in the posterior extension of the frontal sulci (longer and more finely impressed posteriorly in *fumicatus*), when the two species are sorted out on this character other differences appear that leave no doubt that the two are distinct. For example, *fumicatus* (in New Guinea) is usually 2-spotted and always has each elytron sharply 2-striate, while *curticollis* is always 4-spotted and often has the 2nd stria on each elytron less impressed than the 1st. Moreover *curticollis* (in New Guinea) tends to have the sides of the prothorax more sinuate posteriorly, has relatively slightly wider elytra, and is slightly more shining. This species occurs also in eastern **Australia**, from the tip of Cape York to southern New South Wales. I found it at Cape Gloucester, **New Britain**, where *fumicatus* occurred too, but did

not find it on Morotai Is. in the Moluccas, where *fumicatus* was common. I have discussed the possible history of this species under the *Tachys fumicatus* group. Specimens from New Guinea may be slightly different from typical *curticollis* of Australia, but I have found no satisfactory character to separate them. The species varies in trivial ways from locality to locality. For example, my 4 specimens from Dobodura and Oro Bay have the elytra sharply 2-striate, with 2nd stria about as deeply impressed as (but shorter than) 1st; 3 from Lae have 2nd stria deep, but 3 from Nadzab have it lightly impressed; of 4 from Aitape, 2 have 2nd stria deep, 2 almost obliterated (all are 4-spotted and have frontal sulci of *curticollis*); 39 from Hollandia all have 2nd stria relatively lightly impressed (a *fumicatus* from Hollandia accidently mixed with *curticollis* was picked out immediately by the sharply 2-striate elytra); of 11 from Maffin Bay, 2 have 2nd stria deep, 9 light; and 5 from Sansapor, all deep. Fourteen specimens from Cape Gloucester, New Britain, all have the 2nd stria sharply impressed (but of course abbreviated), and so do 26 from 10 localities (tip of Cape York to vicinity of Sydney) in eastern Australia. These details suggest that *curticollis* may be losing the 2nd elytral stria in the main (central) part of New Guinea (*e.g.* at Hollandia) while mixed populations occur to the east and west of the central area (at Lae-Nadzab and Maffin Bay respectively) and pure 2-striate populations occur in peripheral areas, including extreme eastern and western New Guinea, New Britain, and Australia. This may be an early stage in "centrifugal evolution" (see reference, p. 469).

Tachys acaroides Group

Noteworthy characters of this group given by Andrewes are: mentum without foveae; antennae short, submoniliform, segment 2 longer than 3; prothorax without carinae in posterior angles; elytra with margin setulose and serrate, 1 dorsal (sutural) stria impressed, stria 8 nearly obsolete, apical striole absent, and 3rd interval with 2 dorsal punctures, the posterior one not far behind middle; metasternal process hardly margined but with a groove behind it; claws not denticulate.

The species of this group resemble those of the *truncatus* group in appearance and in partial or entire obliteration of stria 8 and the apical striole, but *acaroides* etc. differ from the *truncatus* group in having the mentum without pores (but these

are sometimes absent in *truncatus*) and the posterior dorsal puncture of 3rd interval farther forward, not far behind the middle of elytral length. The single previously known species of the group is *acaroides* Motschulsky of Ceylon and now also of New Guinea (if my specimen is correctly identified), but I have a second, undescribed species from the Philippines.

Tachys acaroides Motschulsky

Motschulsky 1859, Étude Ent. **8**, p. 39.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, p. 469.
—— 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 289 (see for additional references).

Description (for recognition only). A small (less than 2 mm.), testaceous or reddish testaceous *Tachys* which resembles some species of the *truncatus* and *haliploides* groups and must be distinguished by technical characters given in the key to species groups of *Tachys* (p. 403) and in the preceding summary of group characters. Proportions are: head .73 width prothorax; prothoracic width/length 1.44, base/apex 1.22, base/head 1.06; width elytra/prothorax *c.* 1.39. *Measurements:* length *c.* 1.8; width *c.* 0.7 mm. (Andrewes gives length as 1.5 mm.).

Types. From near Colombo, **Ceylon**. According to Andrewes (1925), Motschulsky had at least two original specimens; the actual type (*t.* Andrewes 1935) is in the Moscow University Zool. Mus.

Occurrence in New Guinea. One ♂, Dobodura, **Papua**, Mar.-July 1944 (Darlington).

Measured specimen. The ♂ from Dobodura.

Notes. This species has been known previously only from Ceylon. A supposed record for Sumatra was incorrect, based on a different, unrelated species. My New Guinean individual answers Andrewes' description reasonably well in all details except one: there is a very short vestige of the apical striole at the extreme apex of each elytron; the striole is said to be wanting in *acaroides*. For this and other minor reasons, including the distance from Ceylon, I doubt whether the specimen from New Guinea really represents *acaroides*, but I do not care to describe it from a single specimen without further information.

Tachys haliploides Group

This is a group of short, broad, very convex species defined in the key to species-groups (p. 403). Notable characters, besides the general form and appearance, are mentum without

foveae; antennae rather short, with segments 2 and 3 subequal; basal sulcus of pronotum with 2 foveae at middle; elytra with only 1 discal (sutural) stria well impressed (in species in New Guinea), stria 8 deep posteriorly but obsolete anteriorly, a rather short apical striole on middle of elytral width with a puncture on its inner side about middle of striole's length, and only 1 dorsal puncture on each 3rd interval; and tarsal claws denticulate. Some of the species of this group are very difficult to distinguish, and a careful revision of them is much needed. Those that I have collected usually occur in or under heavy vegetation on wet ground. The group occurs at least from Europe to Australia. I do not know whether it occurs in other parts of the world.

Key to Species of Tachys of haliploides Group Recorded from New Guinea

1. Slightly smaller and narrower (length 1.8–2.3 mm.), with outer segments of antennae usually more or less brownish (p. 474) . . *latissimus*
— Slightly larger and broader; antennae testaceous or nearly so (p. 476) (*haliploides*)

Tachys latissimus Motschulsky

Motschulsky 1851, Bull. Soc. Nat. Moscou **24**, Part 2, No. 4, p. 508.
Andrewes 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 296.
Elaphropus gracilis Motschulsky 1862, Étude Ent. **11**, p. 36.
Andrewes 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 297 (see for synonymy and additional references).
Bembidium bifoveatum Macleay 1871, Trans. Ent. Soc. New South Wales **2**, p. 117.

Description (for recognition only). This is probably the only species of the *haliploides* group that really occurs in New Guinea, and it should therefore be recognizable by group characters given above. Two color forms occur, entirely testaceous or nearly so (the typical form) and strikingly bicolored (subspecies *tinctus,* below). Proportions of the typical form: head .66 and .65 width prothorax; prothoracic width/length 1.54 and 1.57, base/apex 1.46 and 1.41, base/head 1.33 and 1.34; width elytra/prothorax 1.38 and 1.39. *Measurements* (typical form, in New Guinea): length 1.8-2.3; width 0.8-1.0 mm.

Types. Of *latissimus* and *gracilis*, from "Ind. or.", in the Moscow University Zool. Mus.; of *bifoveatum*, from Gayndah, southern Queensland, **Australia**, presumably in the Macleay Mus., Sdyney.

Occurrence in New Guinea. **Papua**: 16, Dobodura, Mar.-July 1944 (Darlington); 15, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 1, Brown R., May 24, 1956 (E. J. Ford, Jr., Bishop Mus.), taken in light trap. **N-E. N. G.**: 1, Lae, Oct. 1944 (Darlington); 4, Nadzab, July 1944 (Darlington); 1, Erima, Astrolabe Bay, 1896 (Biró, Hungarian National Mus.); 3, Aitape, Aug. 1944 (Darlington). The species is represented by another subspecies (below) in Neth. N. G.

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. According to Andrewes (1935), this species or its "variety" *gracilis* (which I see no useful reason to recognize) ranges from **India**, **Burma**, etc., to **New Guinea**, and if *Tachys biforeatus* is a synonym, as I think it is, the range is extended to eastern **Australia** south to **Tasmania**. My Australian specimens, from localities scattered from the Cape York Peninsula to Brisbane, do not seem to be distinguishable from the series from eastern New Guinea. However, as I have said, this is a very difficult group of *Tachys*, and my conclusions about it may have to be revised. The specimens from Aitape are darker and vaguely bicolored (elytra slightly darker than head and prothorax) and therefore tend toward the following subspecies.

Tachys latissimus tinctus n. subsp.

Description. Similar to typical *Tachys latissimus* but slightly wider and different in color: head and prothorax reddish testaceous (head more or less darker posteriorly), elytra piceous or almost black with suture and marginal gutters more or less testaceous, legs testaceous, antennae with basal segments testaceous and outer segments more or less brownish. Proportions: head .65 and .67 width prothorax; prothoracic width/length 1.60 and 1.58, base/apex 1.51 and 1.48, base/head 1.42 and 1.35; width of elytra/prothorax 1.46 and 1.44. *Measurements:* length 1.8-2.1; width 0.85-1.0 mm.

Types. Holotype ♂ (M.C.Z. No. 30,212) and 57 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington).

Additional material. **Neth. N. G.**: 6, Maffin Bay, Aug. 1944 (Darlington); 1, Wisselmeren: Okaitadi, 1800 m. (*c.* 5850 ft.), Aug. 7, 1955 (J. L. Gressitt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This bicolored subspecies of *latissimus* in central and western New Guinea has presumably evolved within the range of the typical form, which it now interrupts.

(Tachys haliploides Bates)

Bates 1892, Ann. Mus. Civ. Genova (Genoa) **32**, p. 289.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 337, 471, 478, pl. 3, figs. 11, 18.
—— 1935, Fauna British India etc., Coleop., Carabidae **2**, pp. 211, 291, 293, fig. 50 (see for additional references).

Description. None needed here. See preceding key to species of *haliploides* group.

Types. From **Burma**, in Genoa Civic Mus.

Occurrence in New Guinea. Doubtful; see notes, below.

Measured specimens. None.

Notes. Andrewes gives the range of this species as from **India** etc. to the **Philippines**, **Celebes**, and **New Guinea**, but the only specimens labeled from New Guinea that I have seen are from "Dorey (Wallace)" and may really be from Celebes or the Moluccas.

Tachys nanus Group

Tachys nanus and its allies form a group which is strongly characterized by the position of the apical striole (long, close to outer margin of elytron) and denticulate tarsal claws. Additional characters of the group are: mentum without foveae; antennae submoniliform; elytra with stria 8 deep posteriorly, shallow or interrupted anteriorly, and 2 dorsal punctures on 3rd or 4th interval; lower surface minutely and inconspicuously pubescent; male with first two segments each front tarsus dilated (widely or narrowly) and squamulose, female with four apical ventral setae almost in line. The group is very widely distributed, although I cannot give its exact limits. It certainly occurs across Eurasia and North America and (in the Old World) southeast across the islands to Australia etc. Most of the species are found on or under the bark of fallen trees and logs, and this probably facilitates their dispersal on drifting logs and on timber carried by man. *Tachys wallacei*, however, judging by the few specimens that I have taken, is truly arboreal, living in dense clumps of leaves and small epiphytes in the undergrowth of rain forest.

Key to Species of Tachys of nanus Group of New Guinea

1. Elytron with more than one dorsal stria well impressed (but often somewhat irregularly so); microsculpture present 2

— Elytron with only 1 dorsal stria (the sutural) well impressed, others much less impressed or absent; microsculpture absent or nearly so . . 3
2. Posterior dorsal puncture of elytron close to 4th stria; larger, more parallel sided, more depressed (p. 477) . . . . . *umbrosus*
— Posterior dorsal puncture of elytron inside 3rd stria; smaller, sides of elytra more rounded, less depressed (p. 478) . . . . . *bardus*
3. Several dorsal striae irregularly indicated (but only sutural well impressed); color brown, not conspicuously spotted (p. 479) . *wallacei*
— Elytron 1-striate; color black often (not always) conspicuously spotted with pale 4
4. Elytra 4-spotted; median impressed line of pronotum deeper at base, usually (not always) extending across basal sulcus and interrupting it (p. 480) . . . . . *acuticollis*
— Not spotted; median line of pronotum less deep posteriorly, not crossing or interrupting basal sulcus (p. 481) . . . . . *coracinus*

Tachys umbrosus Motschulsky

Motschulsky 1851, Bull. Soc. Nat. Moscou **24**, Part 2, No. 4, p. 507.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 485, 488, pl. 3, fig. 12, pl. 4, figs. 22, 25.
—— 1935, Fauna British India etc., Coleop., Carabidae **2**, pp. 211, 299, 300 (see for synonymy and additional references).
Van Emden 1937, Stettiner Ent. Zeits. **98**, p. 34.

Description (for recognition only). A rather large, parallel-sided, depressed, dull black species with characters of the group; elytra multistriate, with two dorsal punctures on each 4th interval near 4th stria. Proportions: head .71 and .70 width prothorax; prothoracic width/length 1.60 and 1.64, base/apex 1.18 and 1.15, base/head 1.15 and 1.15; width elytra/prothorax 1.29 and 1.26. *Measurements:* length 2.4-3.0; width 0.95-1.2 mm.

Types. Motschulsky described *umbrosus* from "Ind. or."; the actual type should probably be in the University Mus. at Moscow; Andrewes saw specimens that he thought were sent by Motschulsky to Putzeys and are now in the Brussels Mus. Of the three names cited by Andrewes (1935) as synonyms, none is based on New Guinean examples.

Occurrence in New Guinea. **Papua**: 8, Dobodura, Mar.-July 1944 (Darlington); 10, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 1, Kokoda, 1200 ft., Sept. 1933 (Cheesman); 4, Kiunga, Fly R., July 4-8, 1957 (W. W. Brandt, Bishop Mus.); 3, Normanby Is., Wakaiuna, Siwa Bay, Jan. 10, 1956 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, lower Busu R., Huon Peninsula, May 1955, in lowland rain forest (E. O. Wilson,

M.C.Z.); 10, Stephansort, Huon Peninsula, 1899 (Biró, Hungarian National Mus.); 4, Sattelberg, Huon Peninsula, 1899 (Biró, Hungarian National Mus.); 2, Madang ("Friedrich-Wilh.-hafen") 1896 (Biró, Hungarian National Mus.); 1, Simbang, Huon Gulf, 1898 (Biró, Hungarian National Mus.); 1, Bulolo, 1200 m. (*c.* 3900 ft.), Aug. 25, 1956 (E. J. Ford, Jr., Bishop Mus.). **Neth. N. G.**: 5, Maffin Bay, Aug. 1944 (Darlington), and 6, same locality, Aug. and Sept. 1944 (E. S. Ross, California Acad.).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. Widely distributed in southern **Asia** including **Ceylon** (but not Japan) and east and south to the **Philippines** and **New Guinea** and the **Solomons**. Another, similar species, *T. nanus,* occurs across temperate Europe and Asia; additional similar species are in temperate North America; and *T. brunnipennis* Macleay of northeastern Australia is similar too. *T. umbrosus* and (I suppose) its immediate allies occur on or under the bark of fallen trees and logs.

Tachys bardus n. sp.

Description. With characters of Andrewes' *nanus* group. Moderately broad and convex; reddish brown, appendages testaceous; rather shining but with visible microsculpture, nearly isodiametric on front, more transverse on pronotum, still more transverse on elytra. *Head* .68 and .67 width prothorax; eyes moderately large and prominent, genae forming *c.* right angles with neck; antennae submoniliform, with middle segments (ignoring pubescence) slightly longer than wide, and segment 2 slightly shorter than 3; frontal grooves sublinear, not deeply impressed, slightly converging anteriorly; mentum without foveae. *Prothorax* much wider than long (width/length 1.43 and 1.43); base wide (base/apex 1.42 and 1.40; base/head 1.32 and 1.32); sides moderately rounded anteriorly, nearly straight and slightly converging posteriorly, slightly sinuate before base; base and apex subtruncate; posterior angles right or slightly obtuse, well defined, minutely prominent or denticulate laterally; lateral margins rather wide (as usual in group), with sides of pronotum above margins produced backward and forming carinae a little inside posterior angles; disc with anterior transverse impression poorly defined, middle line rather deeply impressed, basal sulcus moderately impressed, subinterrupted at middle by base of impressed middle line. *Elytra* less than ½

wider than prothorax (E/P 1.43 and 1.43); margins broadly rounded at humeri, ending about opposite ends of 5th striae; all dorsal striae (1-7) present either as lightly impressed punctate striae (on disc) or lines of puncture (externally); sutural stria entire but other striae slightly abbreviated at base and more so toward apex; stria 8 impressed posteriorly but reduced to a series of punctiform impressions before middle; apical striole long, much nearer outer margin than suture, with puncture on inner edge well back; elytral intervals each with an irregular line of rather widely placed small punctures; elytron also with 2 dorsal punctures, anterior on 4th interval near base, posterior on 3rd interval before posterior ⅔ of elytral length. *Inner wings* fully developed. *Lower surface, legs,* and *secondary sexual characters* normal for group; 2 segments each front tarsus ♂ rather widely dilated. *Measurements:* length 2.2-2.5; width 0.9-1.0 mm.

Types. Holotype ♂ (M.C.Z. No. 30,213) and 3 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington), and 1 paratype from Oro Bay (near Dobodura), Dec. 1943-Jan. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This new species is similar to and probably closely allied to *T. malayicus* Andrewes, known from Singapore etc. and Java, but the new species has distinct microsculpture (lacking in *malayicus*) and is more uniformly colored, without the apical red blotch of *malayicus.*

Tachys wallacei Andrewes

Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 485, 490.

Description (for recognition only). A shining, castaneous, sometimes vaguely 4-spotted member of the *nanus* group, with sides of prothorax very strongly sinuate and elytron with only the sutural stria deeply impressed but with additional striae irregularly indicated. Proportions: head .73 and .76 width prothorax; prothoracic width/length 1.42 and 1.43, base/apex 1.27 and 1.23, base/head 1.13 and 1.09; width elytra/prothorax 1.51 and 1.48. *Measurements:* length 2.0-2.2; width 0.85-1.0 mm.

Type. One ♀ from "New Guinea (Wallace)," in British Mus.

Occurrence in New Guinea. **Papua**: 2, Dobodura, Mar.-July 1944 (Darlington). **N-E. N. G.**: 1, lower Busu R., Huon Peninsula, May 12, 1955 (E. O. Wilson, M.C.Z.), taken in lowland

rain forest; 1, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.); 1, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 1, Hollandia, July-Sept. 1944 (Darlington).

Measurements. The pair (♂ ♀) from Dobodura.

Notes. This very distinct species is the only truly arboreal *Tachys* that I know. My specimens were taken by beating foliage, especially dense clumps of leaves or moss-like epiphytes on the branches of low trees in the understory of rain forest. I suppose the species has invaded this habitat from the tree-trunk zone which the *nanus* group usually inhabits.

Tachys acuticollis Putzeys

Putzeys 1875, Ann. Mus. Civ. Genova (Genoa) **7**, p. 740.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 485, 492.

Description (for recognition only). A small, convex, shining black, conspicuously 4-spotted member of the *nanus* group Proportions: head .76 and .76 width prothorax; prothoracic width/length 1.46 and 1.43, base/apex 1.28 and 1.23, base/head 1.10 and 1.09; width elytra/prothorax 1.45 and 1.41. *Measurements:* length 1.9-2.4; width 0.85-1.05 mm.

Type. From Wokan, **Aru Islands** (O. Beccari, Genoa Civic Mus.).

Occurrence in New Guinea. Recorded by Andrewes from Hapan (Beccari), Ighibieri (Loria, Genoa Civic Mus.), and Geelvink Bay (Raffray and Maindron, Paris Mus.). I have additional material before me as follows: **Papua**: 15, Dobodura, Mar.- July 1944 (Darlington); 9, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 2, Bisianumu (near Sogeri), 500 m. (*c.* 1625 ft.) Mar. 1955 (E. O. Wilson, M.C.Z.), taken in rain forest; 1, Kiunga, Fly R., July 11-14, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 6, lower Busu R., Huon Peninsula, May 1955 (E. O. Wilson, M.C.Z.); 1, Bubia (near Lae), Mar. 1955 (E. O. Wilson, M.C.Z.), taken in lowland rain forest; 1, Joangeng, Mongi Watershed, Huon Peninsula, 500 m. (*c.* 1625 ft.), Apr. 1955, (E. O. Wilson, M.C.Z.); 13, Sattelberg, Huon Gulf, 1899 (Biró, Hungarian National Mus.); 2, Stephansort, Astrolabe Bay, 1898 (Biró, Hungarian National Mus.); 1, Madang ("Friedrich-Wilh.-hafen"), 1896 (Biró, Hungarian National Mus.); 1, Korop, Upper Jimmi Valley, 1300 m. (*c.* 4275 ft.), July 12, 1955 (J. L. Gressitt, Bishop Mus.). **Neth. N. G.**: 3, Hollandia, May 1945 (B. Malkin, Malkin Coll.); 5, Maffin Bay, Aug. 1944 (Darlington); 5, same locality, Sept. 1944 (E. S. Ross, California Acad.); 1, Sansapor, Aug. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. This species probably occurs at low altitudes throughout **New Guinea**, on the bark of fallen trees and logs in rain forest, and it occurs also on the **Aru Is.** (type locality), on Morotai Is. in the **Moluccas** (Darlington), and on **New Ireland** (E. J. Ford Jr., Bishop Mus.).

Tachys coracinus Putzeys

Putzeys 1875, Ann. Mus. Civ. Genova (Genoa) **7**, p. 739.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, p. 485, 491.
—— 1935 Fauna British India etc., Coleop. Carabidae **2**, pp. 299, 301 (see for synonymy and additional references).

Description (for recognition only). A rather small, convex, shining black (unspotted), 1-striate member of *nanus* group. Proportions: head .71 and .73 width prothorax; prothoracic width/length 1.61 and 1.60, base/apex 1.27 and 1.27, base/head 1.19 and 1.16; width elytra/prothorax 1.33 and 1.35. *Measurements:* length 2.0-2.2; width 0.85-0.95 mm.

Types. Described from Sarawak, **Borneo**, from a series of specimens of which some are in the Brussels Mus. and some in the Genoa Civic Mus. A single type has not been selected.

Occurrence in New Guinea. **N-E. N. G.**: 2, Stephansort, Astrolabe Bay, 1898 and 1897 (Biró, Hungarian National Mus.); 1, Wum, Upper Jimmi Valley, 840 m. (*c.* 2730 ft.), July 17, 1955 (J. L. Gressitt, Bishop Mus.). **Neth. N. G.**: 1, Hollandia, May 1945 (B. Malkin, Malkin Coll.).

Notes. T. coracinus is said by Andrewes (1935) to range from **Assam** and **Burma** south in the **Malay Archipelago** to **Celebes** and the **Philippines**, and the records given above extend the range to New Guinea. In general the area of distribution of this species is complementary to that of *acuticollis*, although they overlap to some extent.

Tachys singularis Group

This group is based on *Tachys singularis* Andrewes of Celebes. In his revision of Oriental *Tachys*, Andrewes included *singularis* in his *exaratus* group, which I have here combined with the *politus* group, but *singularis* and *yunax* (below) really have nothing to do with the more typical species of the *politus-exaratus* group. I have, therefore, made a new group characterized, briefly, by lack of foveae on the mentum, very strongly serrate elytral margins, 8th stria of elytron entire but rather

lightly impressed and irregular, and apical striole much nearer margin than suture (about in line of 5th stria) with a puncture just inside it much nearer its posterior than anterior end. Other characters are as in *politus* group, although, as I have said, I think there is no direct relationship. The strong serration of the elytral margins recalls the *serra* group, but that group has the mentum foveate, and the elytral striole and posterior elytral puncture are very differently placed; again I think there is no direct relationship. The position of the apical striole suggests a real relationship with the *nanus* group, but the claws of the *singularis* group are not denticulate, and the serrate elytral margins are different. This group is represented in New Guinea by one species which seems to be rather closely related to *singularis* of Celebes. This is reasonable enough — but, extraordinarily, the species from New Guinea seems to be identical with one I have described from the *West* Indies (see notes under following species)!

Tachys yunax Darlington

Darlington 1939, Mem. Soc. Cubana Hist. Nat. **13**, p. 87.

Description. With characters of *singularis* group as here defined. Form moderately broad, moderately convex; rather irregular reddish yellow with broad dark band across middle of elytra; rather dull, microsculpture distinct and isodiametric but rather lightly impressed on head, faint on pronotum, distinct and transverse on disc of elytra. *Head* .78 and .78 width prothorax; eyes moderately large and prominent, genae very short (*i.e.* posterior edge of eye almost reaches neck); antennae moderately long, (slightly more flattened than usual), middle segments about 2X long as wide, segment 2 equal to or slightly shorter than 3; frontal grooves short and poorly defined; mentum without foveae, toothed. *Prothorax* subquadrate-subcordate, width/length 1.56 and 1.50; base/apex 1.09 and 1.09; base/head 1.03 and 1.07; sides broadly but not strongly rounded in about anterior ¾, broadly sinuate posteriorly; apex subtruncate, faintly lobed at middle, with anterior angles scarcely advanced; base with very broad short truncate lobe at middle, sinuate at sides; posterior angles right, well defined, scarcely costate; lateral margins narrow anteriorly, broader and slightly explanate posteriorly, each with anterior seta about ⅓ from apex and posterior one just before basal angle; disc with usual impressions, but basal sulcus less impressed than in some groups, not

crenate, interrupted at middle, and with a broad, shallow, poorly defined median fovea. *Elytra* rather broad (E/P 1.47 and 1.44); margins rounded at humeri, ending inwardly about opposite bases of 4th striae, strongly dentate (serrate) behind humeri and less strongly so posteriorly; 3 inner discal striae moderately impressed and outer striae increasingly faintly indicated; stria 8 entire but rather shallow and irregular; apical striole farther to the side than usual, about in line of stria 5, with setigerous puncture inside it near elytral apex; 2 dorsal punctures on or just inside of 3rd stria about ¼ from base and ⅓ from apex. *Inner wings* fully developed. *Lower surface:* prosternum longitudinally impressed; anterior process of mesosternum not distinctly margined; last ventral without detectable pubescence (at 100X magnification) in both sexes. *Legs* normal; claws not serrate or at least not distinctly so. *Secondary sexual characters:* ♂ with two segments each front tarsus moderately dilated, squamulose below; ♂ with 1, ♀ 2 setae each side last ventral segment, the setae nearly in line in ♀. *Measurements* (New Guinean specimens): length 2.1-2.2; width 0.85-0.9 mm. (West Indian ones, 2.2-2.3 by *c.* 0.9 mm.).

Types. Holotype ♂ (M.C.Z. No. 23,509) and 69 paratypes all from Sánchez, **Dominican Republic**, West Indies.

Occurrence in New Guinea. **N-E. N. G.**: 9, "I. Deslacs" (Garove Is.), 1901 (Biró); 5, Madang ("Friedrich-Wilh.-hafen"), 1896 (Biró).

Other material. One Dobo, **Aru Is.**, 1908 (Merton, Budapest Mus.).

Measured specimens. Two (♂ ♀) from "I. Deslacs."

Notes. Although I have not compared this species directly with *singularis*, I have a camera-lucida drawing of the latter made at the British Mus. in 1948. Examination of this drawing and of Andrewes' description indicate that *yunax* is slightly larger than *singularis*, with more prominent eyes, and relatively slightly wider prothoracic base.

Biró's specimens were probably taken by sifting, although they are not so labeled. My West Indian specimens were all taken "under logs partly buried in woody debris thrown up at the head of Samaná Bay . . ." I did not find this species at any other locality during my extensive collecting in the West Indies, and Dr. P. Basilewsky, to whom I sent specimens, writes me that it is unknown in Africa. The limited information available suggests that it is native to New Guinea and perhaps other

parts of the Malay Archipelago, that it probably lives in logs as well as wood debris, and that it may somehow have been carried to the West Indies in timber.

Genus LIMNASTIS Motschulsky

Motschulsky 1862, Etude Ent. **11**, p. 27.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, p. 493.
Jeannel 1932, Soc. Ent. France, Livre du Centenaire, p. 170 (see for synonymy and additional references).
Andrewes 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 302.

Diagnosis. See key to genera of Bembidiini (p. 399).

Description. None required here. See references given above. The species of *Limnastis* resemble slender, usually depressed, testaceous or partly brown *Tachys* with short but obvious dorsal pubescence.

Genotype. Lymnaeum indicum Motschulsky of tropical Asia (*t.* Jeannel).

Generic distribution. The warmer part of the Old World; Tenerife in the eastern Atlantic Ocean; Cuba and part of Central America; and the Hawaiian Is. in the Pacific.

Notes. Limnastis inhabits ground-litter and loose soil, often in damp places but not specifically by open water. Individuals are sometimes common in flood debris or at light but are not often seen otherwise. Some African species are blind, and so is *L. inops* of New Guinea (described below). Not many more than a dozen species of the genus are known, against more than 500 species of *Tachys*. That 2 of the few species of *Limnastis* but (so far as I know) no species of *Tachys* are blind suggests some important difference between these genera in habits or genetic composition or history.

Key to Species of Limnastis of New Guinea

1. Eyes lacking; wings vestigial (p. 486) ..... *inops*
— Eyes present; wings fully developed 2
2. Base prothorax *c.* ¼ wider than apex (base/apex 1.28 and 1.22); 1 seta over each eye; color testaceous usually with head dark and discal elytral cloud brownish (p. 485) ..... *atricapillus*
— Base prothorax *c.* 1/10 wider than apex (base/apex 1.12 and 1.09); 2 setae over each eye (the anterior shorter); color nearly uniform testaceous (p. 485) ..... *pilosus*

Limnastis atricapillus Bates

Bates 1892, Ann. Mus. Civ. Genova (Genoa) **32**, p. 297.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 494, 496.
Jeannel 1932, Soc. Ent. France, Livre du Centenaire, pp. 174, 177.

Description. See key above. Proportions: head .67 and .68 width prothorax; prothoracic width/length 1.35 and 1.31, base/-apex 1.28 and 1.22, base/head 1.25 and 1.22; width elytra/prothorax 1.42 and 1.47. *Measurements:* length 1.9-2.2; width 0.75-0.85 mm.

Type. From Katha, **Burma** (L. Fea, Genoa Civic Mus.).

Occurrence in New Guinea. **Neth. N. G.**: 24, Maffin Bay, Aug. 1944 (Darlington); 8 Hollandia, July-Sept. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Maffin Bay.

Notes. This species is now known to occur in **Burma**, **Borneo**, Mindanao in the **Philippines** (C. F. Clagg, M.C.Z.), and **New Guinea**, but I have not seen it from Australia. My specimens were taken by washing out leaf mold and loose earth in damp, shady places.

Limnastis pilosus Bates

Bates 1892, Ann. Mus. Civ. Genova (Genoa) **32**, p. 296.
Andrewes 1925, Ann. Mus. Civ. Genova (Genoa) **51**, pp. 494, 495.
Jeannel 1932, Soc. Ent. France, Livre du Centenaire, pp. 175, 179 (see for "subspecies" and additional references).
Andrewes 1935, Fauna British India etc., Coleoptera, Carabidae **2**, pp. 304, 305.
Tachys setiger Sloane 1903, Proc. Linn. Soc. New South Wales **28**, p. 582.
—— 1921, Proc. Linn. Soc. New South Wales **46**, p. 208.

Description. See key above. Proportions: Head .64 and .66 width prothorax; prothoracic width/length 1.32 and 1.28, base/apex 1.12 and 1.09, base/head 1.20 and 1.16; width elytra/prothorax 1.45 and 1.41. *Measurements:* length 1.9-2.2; width 0.75-0.85 mm. (same as for *atricapillus*).

Types. Of *pilosus*, from **Burma**, type in Genoa Civic Mus. (*t.* Andrewes 1925) and "cotypes" in Andrewes Collection, British Mus. Of *setiger*, from Townsville, **Australia**, in Sloane collection at Canberra (seen by me in 1957).

Occurrence in New Guinea. **Papua**: 1, Milne Bay, Dec. 1943 (Darlington). **N-E. N. G.**: 1. Erima, Astrolabe Bay, 1896 (Biró, Hungarian National Mus.). **Neth. N. G.**: 1, Hollandia, July-Sept. 1944 (Darlington).

Notes. *Limnastis pilosus* is now known to occur in **India**, **Burma** etc., **Formosa**, **Sumatra**, **Java**, **Borneo**, the **Philippines**, **Celebes**, the **Moluccas** (Morotai Is.), **New Guinea**, **New Britain** (Cape Gloucester), and eastern **Australia** from the Cape York Peninsula to Melbourne. Jeannel has divided the species into subspecies, but his material was inadequate: he raised the Australian *setiger,* considered a synonym by Sloane and Andrewes, to subspecific rank apparently without seeing any specimens, because "Il est à présumer qu'elle représente au moins une race geographique . . ." Real study of the geographical variation of the species is needed but I cannot take time for it now. It should be remembered that the winged species of *Limnastis* fly readily — they often fly to light — and that such small, flying insects may be dispersed long distances through the air. There is reason to think that *Limnastis* has been carried across the Atlantic from Africa to the West Indies by wind (Darlington 1938, *American Naturalist* **72**, pp. 521, 533).

Limnastis inops n. sp.

Description. Form as figured (fig. 46); rather large, slender, moderately convex; testaceous; dull, entire upper surface with reticulate microsculpture nearly isodiametric (slightly irregular and transverse) on head, more irregular but not strongly transverse on pronotum and elytra. *Head* small, .57 and .59 width prothorax; eyes absent; antennae rather heavy, middle segments (without pubescence) about 2X long as wide, segments 2 and 3 subequal; front slightly, nearly evenly convex, with frontal sulci broad, slightly impressed, poorly defined; 2 supraorbital setae each side; mentum with a small tooth at middle of emargination. *Prothorax* subquadrate; width/length 1.09 and 1.12; base/apex 1.25 and 1.25; base/head 1.52 and 1.46, sides slightly arcuate in about anterior $\frac{2}{3}$, slightly but very broadly sinuate before base; base and apex subtruncate; basal angles sharply defined, right-acute; 2 lateral setae each side, the anterior just inside margin about $\frac{1}{3}$ from apex, the posterior a little in from side and farther in from base; disc without anterior transverse impression; middle line long, slightly impressed; basal sulcus scarcely indicated; baso-lateral impressions absent; basal margin beginning on each side of angle and running obliquely in and slightly forward toward middle (but widely interrupted at middle); disc rather sparsely punctate as well as microretículate. *Elytra* long, widest about middle, with sides

slightly arcuate and apices subtruncate; width elytra/prothorax *c.* 1.36 and 1.31; humeri prominent, narrowly rounded, margins behind them strongly serrate, and area above each humerus depressed and vaguely carinate; striae vaguely indicated but none (not even sutural) sharply impressed; surface of elytra sparsely punctate about like pronotum; each elytron with a seta-bearing puncture on outer edge 3rd interval slightly behind middle and another (slightly further from suture) near apex. *Inner wings* atrophied. *Lower surface* microreticulate and sparsely and inconspicuously pubescent. *Legs* apparently normal; all tarsi 5 segmented. *Secondary sexual characters* apparently normal: ♂ with first two segments each front tarsus widely dilated and squamulose below and with one seta each side last ventral segment; ♀ unknown. *Measurements:* length 2.7-2.9; width 0.95-1.0 mm.

Types. Holotype ♂ (M.C.Z. No. 30,214) and one broken ♂ paratype from Chimbu Valley, Bismarck Range, **N-E. N. G.**, 5000-7500 ft., Oct. 1944 (Darlington). Both specimens were taken under a deeply buried stone at the foot of a high limestone ridge.

Occurrence in New Guinea. Known only from the types.

Measured specimens. The types.

Notes. So far as I know, the only previously known blind *Limnastis* is *L. gaudini* Jeannel of Tenerife. The present new species differs from it not only in details of form but in having strongly serrate elytral margins and a seta-bearing puncture on 3rd elytral interval not far behind middle. The discovery of this insect associated with limestone suggests that there may be other blind Carabidae in the vicinity, perhaps in caves, of which there were said to be some not far away, although I was not able to reach them. (I now find that additional blind *Limnastis* have been described from Africa by Basilewsky 1951, Rev. Zool. Bot. Africaines **44**, pp. 283, 285, and **45**, p. 85.)

Tribe TRECHINI

This tribe is characterized by, among other things, very long, deep frontal sulci, which curve outward behind the eyes, so that the latter are on raised ocular hemispheres. The tribe has been monographed by Jeannel (who treated it as a subfamily) in *L'Abeille* in 3 parts (Vol. **32**, No. 3, 1926; Vol. **33**, 1927; Vol. **35**, 1928). The tribe is nearly world-wide but is irregularly distributed: flightless forms not associated with running water

occur mostly in the temperate zones north and south of the tropics, while winged, stream-side genera occur across the tropics in both Old and New Worlds (for some further details see Darlington 1959, *Pacific Insects* **1**, pp. 341-345). Many northern forms of the tribe are cave-dwellers and so are a few in New Zealand (Britton 1958, *Proc. R. Ent. Soc.* London (B) **27**, pp. 183-188), but no Australian Trechini live in caves so far as known.

Only two genera of the tribe are known in New Guinea. They are related to each other, and both are winged and live in gravel by running water. The absence of flightless mesophile Trechini even on the mountains in New Guinea is noteworthy.

Key to Genera of Trechini of New Guinea

1. Pronotum with normal lateral margins; elytral margins extending anteriorly around humeri to bases of 5th striae (p. 488) . . . *Perileptus*
— Pronotum without lateral margins; elytral margins ending anteriorly at humeri (p. 489) . . . . . *Perileptodes*

Genus PERILEPTUS Schaum

Schaum 1860, Naturgeschichte Ins. Deutschlands **1**, p. 663.

Jeannel 1923, L'Abeille **32**, p. 402 (see for synonymy and additional references).

Andrewes 1935, Fauna British India etc., Coleop., Carabidae **2**, p. 48.

Diagnosis. See under tribe and in key, above.

Description. None needed here. See references, above.

Genotype. Carabus areolatus Creutzer, of Europe etc.

Generic distribution. Tropical and warm-temperate parts of the old World, the Canary and Cape Verde Is. in the Atlantic, and the West Indies (Greater Antilles) in America (for possible explanation of this distribution, see discussion and reference in notes under *Limnastis pilosus,* above).

Notes. In the Asiatic-Australian area, *Perileptus* occurs in southern Asia north to Japan, across the Malay Archipelago to the Philippines, Moluccas, and the *western* tip of New Guinea (and a species has been described from the New Hebrides by Jeannel 1938, *Rev. Francaise Ent.* **5**, p. 171), and in eastern Australia from at least part of the tropical Cape York Peninsula south at least to warm-temperate New South Wales. However the genus seems to be entirely replaced in the main part of New Guinea by *Perileptodes,* which therefore interrupts the range of *Perileptus.* The present distribution of species suggests

that *Perileptus* is invading or re-invading New Guinea. Two species, which I identify tentatively as *japonicus* Bates and *platypterus* Jeannel (both Oriental), reach the Moluccas (Morotai Is.), and one of them (*japonicus*) extends to the Bird's Head of western New Guinea. The species of *Perileptus* live in the gravel banks and bars of brooks and rivers.

Perileptus japonicus Bates

Bates 1873, Trans. Ent. Soc. London **1873**, p. 296.

Jeannel 1926, L'Abeille **32**, pp. 406, 414, figs. 188, 189 (see for additional references).

Description. A rather dull, testaceous to blackish *Perileptus* with eyes large (in genus) and with posterior prothoracic angles broadly formed (not minutely prominent), nearly rectangular. Proportions: head .95 width prothorax; prothoracic width/length 1.32, base/apex (not calculated), base/head .72; width elytra/prothorax 1.30. *Measurements:* length *c.* 2.2; width *c.* 0.7 mm. (specimens from Morotai are usually larger).

Type(s). From Hiogo; **Japan** (Lewis, British Mus.).

Occurrence in New Guinea. **Neth. N. G.**: 1 ♀, Sansapor (Vogelkop), Aug. 1944 (Darlington).

Measured specimen. The ♀ from Sansapor.

Notes. Jeannel records *japonicus* from **Japan**, **Hong Kong**, and **Celebes**, and my series from Morotai in the **Moluccas** and the single specimen from western **New Guinea** seem structurally similar, though smaller and darker than Japanese specimens.

Genus Perileptodes Jeannel

Jeannel 1926, L'Abeille **32**, pp. 402, 430.

Diagnosis. See preceding key.

Description. See Jeannel's description, and figures of *pilifer* (below). But note that Jeannel's statement that the ♂ front tarsi are unmodified ("absolument semblables à ceux des femelles") is not correct. Each ♂ front tarsus has the first 2 segments slightly but distinctly widened, and each of these segments has a long, sickle-shaped scale beneath it. This is the case in both species of the genus.

Genotype. P. pilifer Jeannel.

Generic distribution. Widely distributed in New Guinea; unknown elsewhere.

Notes. The two distinct species of this genus occur at the same localities over much of New Guinea, but only one of them

(*pilifer*) is known in the extreme east of the island, in Papua. Both (like *Perileptus*) live in gravel by running water, but whether their habitats are precisely identical I do not know. Both species vary geographically, but I have not been able to define useful subspecies.

Key to Species of Perileptodes

1. Posterior angles of pronotum a little before base, dentiform, acute, more or less divergent; usually smaller, length 2.2–2.7 mm. (p. 490) *pilifer*

— Posterior angles of pronotum at or near base, or not distinctly dentiform; usually larger, length 2.7–3.6 mm. (and see notes under this species) (p. 491) . . . . . *jeanneli*

Perileptodes pilifer Jeannel

Jeannel 1926, L'Abeille **32**, p. 431, figs. 211–216.

Description. See preceding key, and Jeannel's description. Proportions: head .88 and .88 width prothorax; prothoracic width/length 1.27 and 1.23, base/apex (not calculated), base/-head .66 and .63; width elytra/prothorax *c.* 1.33 and 1.38. *Measurements:* length 2.2-2.7; width 0.7-0.9 mm.

Type. From Kapakapa (south coast of **Papua**), collected by L. Loria, in Jeannel collection, Paris Mus.

Occurrence in New Guinea. **Papua**: 6, Dobodura, Mar.-July 1944 (Darlington); 11, Oro Bay, Dec. 1943-Jan. 1944 (Darlington). **N-E. N. G.**: 11, Nadzab, July 1944 (Darlington); 5, Lae, Oct. 1944 (Darlington); 8, Sambeang, Mongi Watershed, Huon Peninsula, 400 m., Apr. 21, 1955 (E. O. Wilson, M.C.Z.); 37, Chimbu Valley, Bismarck Range, 5,000-7,500 ft., Oct. 1944 (Darlington). **Neth. N. G.**: 2, Sansapor (Vogelkop), Aug. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Chimbu Valley.

Notes. This species varies in details of the dentiform posterior angles of pronotum and in coarseness of punctures of discal elytral striae, which are sometimes so coarse that the fixed discal punctures are almost lost among them (*cf.* Jeannel's figure 211, in which the strial punctures are fine and the fixed punctures conspicuous). The variation is partly geographical, but individual variation prevents recognition of distinct subspecies.

PERILEPTODES JEANNELI n. sp.

Description. Form (fig. 47) about as in *P. pilifer* but larger; black, elytra often brown discally; appendages brown; shining, dorsal surface without distinct microsculpture but rather sparsely punctate, each puncture with a rather long semi-erect hair. *Head* large, .93 and .91 width prothorax; eyes prominent, genae oblique; antennae long, middle segments 3X to 4X as long as wide (without pubescence), segment 3 much longer than 2 and somewhat longer than 4, all segments including scape pubescent; frontal grooves deep and curved as usual; front irregularly depressed, separated from clypeus by a deep transverse groove; clypeus with a second deep transverse groove slightly before middle, punctate anteriorly; labrum rather deeply emarginate; mentum strongly toothed. *Prothorax* cordate; width/length 1.21 and 1.21; base very narrow; base/apex not calculated (apical angles so indistinct that apex cannot be exactly measured); base/head .57 and .59; sides strongly rounded anteriorly, then weakly and irregularly rounded and strongly converging to strong basal sinuations; lateral margins obliterated but marginal setae present about 1/6 from apex and at basal angles; apex subtruncate, rounded into sides without distinct anterior angles; base subtruncate; posterior angles right, sometimes slightly irregular or subdentiform but not strongly divergent; disc not strongly convex, with anterior transverse impression subobsolete, middle line very deeply impressed, basal sulcus impressed but rather irregular, with area behind it coarsely rugose. *Elytra* about 1/2 wider than prothorax (E/P 1.47 and 1.53), widest about middle, with sides slightly arcuate, then each obliquely subtruncate at apex; humeri moderately prominent but obtusely rounded; lateral margins ending at humeri (no basal margins); each elytron with sutural stria deeply impressed in posterior 3/4, obsolete or less sharply impressed anteriorly, but becoming very deep again at extreme base (or suture elevated); other striae absent; 3 "fixed" punctures on (position of) 3rd interval (but nearly lost in the general pubescence). *Inner wings* fully developed. *Lower surface* with episterna mostly smooth, but most of rest of surface punctate and pubescent. *Legs* rather long and slender but apparently without unusual characters. *Secondary sexual characters:* ♂ tarsi as described for genus; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements:* length 3.1-3.6; width *c.* 1.1-1.2 mm. (type series). Specimens

from lower altitudes in N-E. N. G. measure 2.7-3.3; from Sansapor in western Neth. N. G., *c.* 2.9 mm.

Types. Holotype ♂ (M.C.Z. No. 30,215) and 30 paratypes all from Chimbu Valley, Bismarck Range, **N-E. N. G.**, 5000-7500 ft., Oct. 1944 (Darlington).

Other material. **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington); 8, Lae, Oct. 1944 (Darlington); 11, Sambeang, Mongi Watershed, Huon Peninsula, 400 m. (*c.* 1300 ft.), Apr. 21, 1955 (E. O. Wilson, M.C.Z.). **Neth. N. G.**: 2, Sansapor, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and one ♀ paratype.

Notes. Typical specimens of this new species differ from *pilifer* in being much larger and darker; specimens of the two species from Chimbu Valley are instantly separable by size alone. Specimens from Nadzab, Lae, and Sambeang are smaller but still usually obviously larger and darker than *pilifer* from the same localities. The two specimens from Sansapor are rather small, hardly larger than *pilifer* from the same locality, but are very smooth, while the two *pilifer* from Sansapor have the elytral striae on the disc so coarsely punctate that the anterior fixed punctures are almost lost among the strial punctures (the size of the strial punctures varies individually in some localities). These facts suggest that there are two basic species of this genus, both widely distributed in New Guinea, which are perfectly distinct from each other in any given locality although the characters distinguishing them may differ somewhat from place to place. It might be possible to divide one or both species into geographical subspecies, but the situation is so complex that I do not care to attempt it now.

Tribe PANAGAEINI

Panagaeines are rare insects in New Guinea. I have seen from there only 7 specimens representing 3 genera and species. A fourth genus may occur: *Craspedophorus*, which is widely distributed in the Old World tropics and which, in the Asiatic-Australian area, is now known from southern Asia to Sumatra, Java, Borneo, and the Philippines, and in a separate area which includes much of Australia north to the tip of Cape York (and Horn Is. north of the tip) and which may reach southern New Guinea, although it is not yet recorded there. This genus is included (in parentheses) in the following key but is not formally treated here. The genotype of *Craspedophorus* is *Carabus*

reflexus Fabricius 1781 (not 1801) of Africa (fixed by Basilewsky 1953, *Exploration du Parc National de l'Upemba,* Fasc. 10, p. 171).

Panagaeines are in general ground-living, mesophile Carabidae, not usually associated with open water. Different ones occur in both humid and arid regions. Wing atrophy is common in this tribe, but the species actually known from New Guinea are all winged. In *Craspedophorus,* however, the wings have atrophied.

Key to Genera of Panagaeini that occur (or may occur) in New Guinea

1. Labrum with middle pair of setae much farther forward than lateral pair; paraglossae not prolonged beyond apex of ligula; (color above, including sides of pronotum, uniform bluish or greenish black; legs rufous) (p. 493) ... *Trichisia*
— Labrum with middle pair of setae not much farther forward than lateral pair; paraglossae prolonged beyond apex of ligula; (usually spotted; if elytra uniformly dark, at least sides of pronotum paler posteriorly) ... 2
2. Fourth segment hind tarsi strongly lobed (p. 494) ... *Dischissus*
— Fourth segment hind tarsi emarginate but not strongly lobed ... 3
3. Male front tarsi usually slightly dilated and (in New Guinean species) with sexual pubescence below; winged (p. 495) ... *Microschemus*
— Male front tarsi not modified; wings vestigial (and metepisterna often much shortened, but this is a variable character) ... (*Craspedophorus*)

Genus TRICHISIA Motschulsky

Motschulsky 1864, Bull. Soc. Nat. Moscou **37**, Part 2, No. 4, p. 331.
Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 364 (see for additional references).

Diagnosis. See preceding key to genera of Panagaeini.

Description. None needed here.

Genotype. Trichisia cyanescens Motschulsky, of southern Asia ("Ind. orientale").

Generic distribution. Southern Asia and the Malay Archipelago to tropical Australia; and apparently part of Africa.

Notes. The species of *Trichisia* differ from each other by rather slight characters of color, proportions, and sculpture, and some of the characters vary individually. I think it likely that all the Asiatic-Australian forms of the genus are modifications of 1 or at most 2 stocks. However I am not now prepared to suggest changes in their taxonomy or nomenclature.

Trichisia papuana Csiki

Csiki 1907, Ann. Mus. Nat. Hungary **5**, p. 576.

Description (for recognition only). A broad, greenish blue (with red or testaceous legs), unspotted, winged species, *c.* 11 mm. long. Proportions: head .53 and .52 width prothorax; prothoracic width/length 1.44 and 1.42, base/apex (not calculated), base/head 1.52 and 1.57; width elytra/prothorax 1.35 and 1.38. *Measurements:* length *c.* 11; width *c.* 4.7-5.0 mm. (my measurement of the type is *c.* 11 x 4.7 mm.).

Type. A ♀ (dissected) from Madang (Friedrich-Wilhelmshafen), **N-E. N. G.**, collected in 1896 by L. Biró, now in Hungarian National Mus.

Occurrence in New Guinea. **N-E. N. G.**: the type. **Papua**: 1 ♀ (dissected), Nari (Mudge) Is. (east of the eastern tip of New Guinea), Nov. 4, 1917 (J. T. Zimmer, Chicago Mus.).

Measured specimens. The ♀ type and the ♀ from Nari Is.

Notes. Csiki considered this species related to *T. azurea* of Australia but broader, slightly different in color, with elytral intervals lightly but evidently wrinkled. However comparison of Csiki's type (which I have been able to examine through the courtesy of Dr. Z. Kaszab) with Australian specimens shows no significant difference in form, and other differences are slight. More material is needed to show whether the New Guinean form differs from the Australian one by any constant characters.

Genus Dischissus Bates

Bates 1873, Trans. Ent. Soc. London **1873**, p. 243.

Chaudoir 1878, Ann. Soc. Ent. Belgique **21**, pp. 85, 149.

Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 363 (see for additional references).

Andrewes 1939, Ann. Mag. Nat. Hist. (11) **3**, p. 134.

Diagnosis. Small, rather slender, quadri-maculate, winged panagaeines, with characters indicated in the preceding key to genera.

Description. None required here. See Chaudoir.

Genotype. Dischissus mirandus Bates, of Japan (fixed by Andrewes 1939).

General distribution. Africa and southern Asia north to Japan and south and east across the islands to New Guinea.

Notes. A single Oriental species of this genus extends to New Guinea.

Dischissus notulatus (Fabricius)

Fabricius 1801, Systema eleutheratorum **1**, p. 201 (*Carabus*).
Chaudoir 1878, Ann. Soc. Ent. Belgique **21**, p. 115.
Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 363 (see for synonymy and additional references).
Andrewes 1933, Trans. Ent. Soc. London **81**, p. 5.

Description. None required here; see generic diagnosis. Proportions: head .62 and .59 width prothorax; prothoracic width/length 1.30 and 1.32, base/apex (not calculated), base/head 1.18 and 1.20; width elytra/prothorax 1.36 and 1.30. *Measurements:* length *c.* 7.7-8.7; width c. 3.0-3.3 mm.

Type. Fabricius' type, from "Bengalia," is in the Copenhagen University Mus.

Occurrence in New Guinea. **Papua**: 1 ♀, Fly R. 5 miles below Palmer R., May 14-22, 1936, and 1 ♀, Lake Daviumbu, Fly R., Aug. 19-30, 1936 (both Archbold Expedition, A.M.N.H.).

Measured specimens. The 2 ♀ ♀ listed above.

Notes. This species is known from **southeastern Asia**, **Sumatra**, **Java** (Andrewes Collection), and the **Philippines**, and presumably occurs on other islands between Asia and **New Guinea**. The Fly R. specimens were probably collected in light traps, for there are scales of Lepidoptera on them.

Genus Microschemus Andrewes

Andrewes 1940, Ann. Mag. Nat. Hist. (11) **5**, p. 536 (new name for *Microcosmus* Chaudoir).
Microcosmus Chaudoir 1878, Ann. Soc. Ent. Belgique **21**, pp. 85, 139.
Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 361 (see for additional references).
Andrewes 1939, Ann. Mag. Nat. Hist. (11) **3**, p. 135.

Diagnosis. Small, broad, winged panagaeines, characterized (in New Guinea) as indicated in the preceding key to genera. Typically, the anterior tarsi of the ♂ are somewhat dilated but without special pubescence, but in the New Guinean species the ♂ tarsi are scarcely dilated but have some sexual pubescence below.

Description. None required here. Chaudoir gives the characters of the genus in detail.

Genotype. Panagaeus cruciatus Dejean, of Africa (fixed by Andrewes 1939).

Generic distribution. Africa, southern Asia north to Japan and south and east across the Malay Archipelago to tropical Australia.

Notes. Only 1 species of this genus occurs in the Australian Region, including New Guinea. It was described by Csiki as a *Trichisia*.

Microschemus quadrimaculatus (Csiki)

Csiki 1907, Ann. Mus. Nat. Hungary **5**, p. 577 (*Trichisia*).

Description (for recognition only). A small, broad, winged species (form as figured, fig. 48); color black with sides of pronotum reddish posteriorly and elytra either with or without pale maculae (in the maculate form each elytron has a submarginal posthumeral blotch and a subapical one). Proportions: head .53 and .56 width prothorax; prothoracic width/length 1.58 and 1.50, base/apex (not calculated), base/head 1.60 and 1.62; width elytra/prothorax 1.32 and 1.28. *Measurements:* length *c.* 7.5-8.0; width *c.* 3.2-3.5 mm. (my measurement of type: *c.* 8 x 3.5 mm.).

Type. A ♀ (dissected) from Madang (Friedrich-Wilhelmshafen), **N-E. N. G.**, collected in 1896 by L. Biró, in Hungarian National Mus.

Occurrence in New Guinea. **N-E. N. G.**: the type from Madang and 1 additional (♂) specimen from the same locality, also collected in 1896 by Biró (Hungarian National Mus.). **Papua**: 1 ♂, Dobodura, Mar.-July 1944 (Darlington).

Measured specimens. The type (♀) and 2nd specimen (♂) from Madang.

Notes. I have assigned this species to *Microschemus* in spite of the fact that the ♂ anterior tarsi are scarcely dilated and are pubescent below. Otherwise the New Guinean species seems to be a *Microschemus* and I do not want to multiply genera unnecessarily.

This species seems to be strikingly dimorphic in color. The type is quadrimaculate, but the second specimen from Madang has the elytra without trace of spots and so does the specimen from Dobodura. More specimens are needed to show whether this variation is strictly dimorphic or whether intermediate color forms occur.

This species occurs also in tropical Queensland, **Australia**. I took 4 specimens, including both sexes, west of Ravenshoe on the Atherton Tableland in Feb. 1958. They are all spotted, the spots being somewhat larger than in the type of *quadrimaculatus*. The genus has not previously been reported from Australia. The Australian specimens were taken in clumps of

grass around the edge of a shallow flooded pond in relatively open (sparsely forested) country. My Dobodura specimen was taken at light.

Tribe PTEROSTICHINI

A considerable proportion of the medium-sized (or less often small or large) ground-living (or often semi-aquatic but rarely arboreal) Carabidae of the world are Pterostichini. The tribe is world-wide in distribution but is not evenly distributed. Within the Australian region Pterostichini are very numerous in Australia but relatively few in New Guinea, where they are replaced as dominant Carabidae by species of the tribe Agonini. I have elsewhere (*Psyche* 1956, **63**, pp. 1-3) discussed this general complementarity and have suggested that it is due to a complex combination of ecological, historical, and geographical factors. Over the world as a whole, there is a tendency for Agonini to be better represented in the tropics, Pterostichini, in the temperate zones, although this zonal complementarity is not strongly defined. Also it is probable that Agonini are more recent in origin than Pterostichini and that they have dispersed more recently. However, the dispersal of each group has been very complex, and even the Agonini dispersed long enough ago to have reached all parts of the world and to have differentiated to some extent in different regions. I base this hypothesis, of the more recent rise and dispersal of Agonini, chiefly on the lesser diversity of this tribe as compared with Pterostichini. If all this is correct, Pterostichini are dominant in Australia partly because Australia is more temperate than tropical in climate and partly because Pterostichini reached Australia before Agonini did, and Agonini are dominant in New Guinea partly because the climate there is fully tropical and partly because the carabid fauna of New Guinea is more recent in its origins than that of Australia.

I shall not attempt a formal characterization of the tribe Pterostichini. Briefly, Pterostichini are similar to Agonini but usually have the outer margins of the elytra interrupted before the apex. The margins are not interrupted in Agonini. However, there are exceptions to this character (see notes under *Lesticus toxopei,* descriptions of *Paraloma* and *P. fortis,* and notes under *Haploferonia* and *Nebrioferonia*). If there are genitalic characters that really separate Pterostichini and Agonini, I cannot give them. The parameres are diverse in Pterostichini even among the few genera in New Guinea (figs. 63-70), and

seem to give no simple character to define the tribe. Perhaps I should add that Agonini are probably derived from Pterostichini and are sometimes treated as a special group of the latter.

The Pterostichini of New Guinea are rather diverse taxonomically, much more so in proportion to number of species than New Guinean Agonini are. That is, the Pterostichini of New Guinea represent relatively more separate ancestors but fewer species produced by local radiations. Nevertheless, many Australian genera, and also some Oriental ones that extend to the western part of the Malay Archipelago, are unrepresented in New Guinea. The pterostichine fauna of the island is therefore depauperate both in basic stocks and in total number of species. In terms of present distributions (regardless of origins) this fauna is a mixture of some chiefly Oriental or Old-World-tropical elements, some (but fewer) Australian elements, and some (but probably still fewer) endemic ones. The chiefly Oriental or Old-World-tropical elements include *Morion* (the New Guinean species of this genus are not directly related to the endemic Australian ones), *Brachidius, Caelostomus, Abacetus, Lesticus*, and *Cosmodiscus*. The Australian elements include *Mecyclothorax, Catadromus, Prosopogmus*, and *Loxandrus*. The endemic elements include most of the few genera known from New Guinea that are not listed in the last two sentences. This geographical classification of genera is, as I have said, based on existing distributions. It does not necessarily mean that the genera in question have actually been derived from the regions indicated. I think that in fact the Oriental elements probably have reached New Guinea from the Oriental Region but that some of the so-called Australian elements may not have come from Australia. For example, *Mecyclothorax* now occurs in Australia but not in Asia, with a few species scattered on high mountains in the Malay Archipelago, but *Mecyclothorax* has reached the Hawaiian Is., and it seems likely that it did so when it was more widely distributed on the continents than now and that it has retreated into Australia rather than spread from there. This is more clearly the case with *Loxandrus*. *Loxandrus* now occurs in Australia and New Guinea (and west to Celebes) and in the warmer part of the Americas. This great discontinuity suggests that the genus is retreating and has not spread from either of its present areas of occurrence.

Winged, dimorphic, and flightless pterostichines now occur on New Guinea, but their ancestors may all have been winged when they reached the island, the wings then atrophying locally

in several stocks. There are no relicts of old flightless groups of Pterostichini on New Guinea. This is a significant fact, in view of the large number of wholly flightless genera of the tribe in Australia.

The following key to genera of Pterostichini of New Guinea is based in part on works of Chaudoir, Tschitschérine, Sloane, Andrewes, and Straneo. Although I have used phylogenetic characters where they are obvious and convenient, the key as a whole is not phylogenetic but is in part superficial, designed primarily for identification. The Pterostichini of New Guinea are too few and too unrepresentative of the tribe as a whole to justify phylogenetic treatment. I have for the most part avoided characters based on mouth parts (although these are fundamental in pterostichine taxonomy) because they are often hard to see in ordinary specimens and because even specialists are often mistaken in their descriptions of them.

One Australian pterostichine genus, *Pocciloidea*, that is recorded from New Guinea probably does not really occur there. The only New Guinean record for the genus is "*Pocciloidea*" *ornata* Tryon, which is probably not a *Pocciloidea* and not even a pterostichine but a synonym of *Hololeius ceylanicus*, which will be treated in Part III of the present work.

Key to Genera of Pterostichini of New Guinea

1. Front tibia with outer apical angle strongly produced; (form parallel; head large; antennae moniliform) (p. 500) ..... *Morion*
— Front tibia with outer apical angle not produced; (other characters variable) 2
2. Small, compact; antennae moniliform; elytron with basal pore (if present) at base 3rd stria 3
— Size and form variable; antennae usually not moniliform; elytron with basal pore (if present) near or inside base 2nd stria (not counting scutellar striole, if present) 4
3. Elytron without basal pore; anterior-lateral prothoracic setae almost on anterior angles (p. 507) ..... *Brachidius*
— Elytron with basal pore (at base 3rd stria); anterior-lateral prothoracic setae *c.* 2/5 prothoracic length behind anterior angles (p. 508) *Caelostomus*
4. Mandibles with setae in scrobes; small and (in New Guinea) high-mountain-living (p. 505) ..... *Mecyclothorax*
— Mandibles without setae in scrobes; size and habitat variable 5
5. Antennae with segment 2 attached to 1 more eccentrically than usual; (small, 4.7–6.8 mm., and in New Guinea, water-loving species) (p. 517) ..... *Abacetus*

— Antennae with segment 2 attached to 1 less eccentrically; (size and habitat variable) 6

6. Antennae each with 4 basal segments glabrous; size very large, length (in New Guinea) *c.* 50 mm. or more (p. 563) ..... *Catadromus*

— Antennae with 3 basal segments glabrous; size much smaller 7

7. Abdomen with last 3 ventral segments transversely impressed or margined at base at least toward sides 8

— Abdomen with ventral segments not thus impressed or margined 10

8. Elytron with 10th interval absent or not distinct from margin (p. 536) *Prosopogmus*

— Elytron with a distinct 10th interval at least posteriorly 9

9. Elytra with 3rd intervals impunctate; scutellar striae absent; proepisterna longitudinally wrinkled (p. 533) ..... *Rhytiferonia*

— Elytra with 3rd intervals with fixed punctures; scutellar striae present (except when other striae obsolete); proepisterna not wrinkled (but often punctate) (p. 521) ..... *Lestieus*

10. Small, broad (prothoracic width/length *c.* 1.55-1.71), compact (superficially somewhat similar to *Brachidius* but with antennae less stout and basal pore of elytron present, at base stria 2) (p. 513) ..... *Cosmodiscus*

— Size small to large, but never so broad and compact 11

11. Elytra with 3rd interval 1-punctate; (scutellar striae absent or nearly so) 12

— Elytra with 3rd interval impunctate 15

12. Antennae "almost geniculate," segment 1 longer than 2 and 3 together (genus placed tentatively from description; see notes under genus) (p. 516) ..... *Homalonesiota*

— Antennae not geniculate, segment 1 shorter than 2 and 3 together 13

13. Metepisterna (not including posterior lobes) scarcely longer than wide (p. 547) ..... *Haploferonia*

— Metepisterna longer than wide 14

14. Prothorax not cordate (p. 549) ..... *Loxandrus*

— Prothorax cordate (p. 557) ..... *Nebrioferonia*

15. Very small (4.0-4.5 mm.); scutellar stria lacking (p. 560) ..... *Tiferonia*

— Larger; scutellar stria present 16

16. Wings usually (not always) fully developed; form normal, head not very large (p. 541) ..... *Platyeoelus*

— Wings atrophied; head very large (p. 538) ..... *Paraloma*

Genus MORION Latreille

Latreille 1810, Considérations Général ..... Insectes, p. 159.

Sloane 1904, Proc. Linn. Soc. New South Wales **29**, pp. 530–534 (Australian species).

Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 479 (see for additional references).

Andrewes 1946, Proc. R. Ent. London (B) **15**, p. 86 (characters of Oriental species).

Van Emden 1953, Proc. Hawaiian Ent. Soc. **15**, pp. 51–54 (taxonomic position).

Diagnosis. See preceding key to genera. The species of *Morion* have a characteristic appearance: parallel sided, big-headed with prominent genae, with rather short antennae and legs, and plain black (or brown) in color. Males have anterior tarsi scarcely dilated but with segments 2 and 3 (and sometimes 1) inconspicuously biseriately squamulose; both sexes have 1 seta each side apex last ventral segment.

Description. None needed here.

Genotype. Harpalus monilicornis Latreille, of warm temperate and tropical America.

Generic distribution. The warmer parts of the world.

Notes. The Oriental species of *Morion* are notoriously difficult to distinguish (Andrewes). A distinct group of the genus occurs in Australia, characterized by presence of extra setae on the prothoracic margins, and including such well marked species as *crassipes* Sloane (very large, with middle tibiae arcuate and hind tarsi wide) and *pachysomus* Chaudoir (with modified, dentate clypeus), but this group is apparently not represented in New Guinea. *M. longipenne* Putzeys does occur in Australia as well as New Guinea, but it belongs to the Oriental rather than the Australian group of the genus; it has probably reached Australia recently via New Guinea. All the species of *Morion* that I have collected are found under the bark of dead trees and logs and in rotten wood. Most of them, including the New Guinean species, are winged. Their chances of dispersal on drifting logs or through the air are therefore probably good. This probably accounts for the almost world-wide distribution of the genus, for the striking similarity of species in different regions, and for the occurrence of the genus on certain remote islands including Christmas Island in the Indian Ocean.

Key to Species of Morion of New Guinea

1. Humeri almost always rather strongly toothed, the teeth reaching laterally to or beyond outer edges of bases of 7th intervals; form a little more convex; prothoracic lateral margins a little wider; pronotum with a distinct (but not sharply defined) transverse subbasal impression not more than 1/10 of prothoracic length from base (p. 502) ..... *humeratum*

— Humeri not strongly toothed; form a little more depressed; lateral margins of prothorax a little narrower; pronotum usually without subbasal transverse impression as described above (p. 503) . . *longipenne*

Morion humeratum Chaudoir

Chaudoir 1880, Bull. Soc. Nat. Moscou **55**, Part 1, No. 2, pp. 335, 352.

Description. None needed here. See key, above. Proportions: head .89 and .83 width prothorax; prothoracic width/length 1.45 and 1.37, base/apex .87 and .95, base/head .86 and .97; width elytra/prothorax 1.11 and 1.15. *Measurements:* length 11.5-16.5; width 3.5-5.2 mm.

Types. From New Guinea (presumably **Papua**), near the Fly R. and "Katau" (?Katau) (D'Albertis). There were a number of specimens in the original series and some have probably been distributed. No single type was designated and its selection should be left to the next reviser; it would be wise to select it from specimens retained by Chaudoir and now presumably in the Oberthür Collection, Paris Mus.

Occurrence in New Guinea. **Papua**: 3, Dobodura, Mar.-July 1944 (Darlington); 1, Karema, Brown R., Mar. 8-11, 1955 (E. O. Wilson, M.C.Z.), taken in lowland rain forest; 1, Brown R., May 25, 1956 (E. J. Ford, Jr., Bishop Mus.). **N-E. N. G.**: 6, Sattelberg, Huon Gulf, 1899 (Biró, Hungarian National Mus.); 1, Stephansort, Astrolabe Bay, 1900 (Biró Hungarian National Mus.); 2, Bulolo, 730 and 1,000 m. (*c.* 2400 and 3250 ft.), Aug. 18 and 20, 1956 (E. J. Ford, Jr., Bishop Mus.); 2, Wum, Upper Jimmi Valley, 840 m. (*c.* 2730 ft.), July 17, 1955 (J. L. Gressitt, Bishop Mus.); 1, Sepalakambang, Salawaket Range, 1920 m. (*c.* 6250 ft.), Sept. 12, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Boana Mission, Huon Peninsula, 900 m. (*c.* 2925 ft.), Sept. 4-5, 1956 (E. J. Ford, Jr., Bishop Mus.). **Neth. N. G.**: 2, Humboldt Bay district, 1937 (W. Stüber, British Mus.); 2, Maffin Bay, Aug. 1944 (Darlington); 2, same locality, Aug. and Sept. 1944 (E. S. Ross, California Acad.); 1, Bomberi, Vogelkop, 700-900 m. (*c.* 2275-2925 ft.), June 9, 1959 (J. L. Gressitt, Bishop Mus.).

Measured specimens. A large ♂ and a small (and relatively small headed) ♀ from Dobodura.

Notes. This species occurs also on Bougainville Is., **Solomons** (B. D. Valentine, received from G. E. Ball) but is unknown elsewhere. My Dobodura specimens were taken in rotting logs rather than under bark.

Morion longipenne Putzeys

Putzeys 1875, Ann. Mus. Civ. Genova (Genoa) **7**, p. 727.
Chaudoir 1880, Bull. Soc. Nat. Moscou **55**, Part 1, No. 2, pp. 333, 337.
Sloane 1904, Proc. Linn. Soc. New South Wales **29**, pp. 530, 531.
—— 1907, Deutsche Ent. Zeits. **1907**, p. 470.
Maindron 1908, Nova Guinea **5**, p. 295.
Sloane 1920, Proc. Linn. Soc. New South Wales **45**, p. 321.
Andrewes 1930, Cat. Indian Carabidae, p. 221.
?d'albertisi Chaudoir 1880, Bull. Soc. Nat. Moscou **55**, Part 1, No. 2, pp. 333, 336.
?stolidum Chaudoir 1880, Bull. Soc. Nat. Moscou **55**, Part 1, No. 2, pp. 333, 336.
Andrewes 1933, Mem. Mus. R. Hist. Nat. Belgique, hors ser., **4** (4), p. 10.

Description. An "ordinary" *Morion,* very similar to the Oriental species; see key above and notes below. Proportions: head .88 and .80 width prothorax; prothoracic width/length 1.44 and 1.39, base/apex .89 and .92, base/head .89 and .96; width elytra/prothorax 1.07 and 1.15. *Measurements:* length 11.5-17.0; width 3.4-5.0 mm.

Types. Of *longipenne*, from **New Guinea** (Andai, Hatam, and Sorong, collected by Beccari and D'Albertis) and **Aru Is.** (Beccari); Putzeys did not designate a single type, but Andrewes considered the type to be in the Genoa Civic Mus. Of *d'albertisi*, from Katau and Fly R., and of *stolidum*, from Fly R. and Hatam, **New Guinea**; Chaudoir had several specimens of each species. Lectotypes should be designated for all these species by the next reviser.

Occurrence in New Guinea. Specimens are before me from **Papua**: 14, Dobodura, Mar.-July 1944 (Darlington); 4 Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 1, Milne Bay, July (Wind, M.C.Z.); 5, Kokoda, June, July, Aug. 1933 (Cheesman); 2, Bisianumu near Sogeri, 500 m. (about 1625 ft.), Mar. 15-20, 1955 (E. O. Wilson, M.C.Z.), in rain forest; 5, Kiunga, Fly R., July 4-8 and 11-14, Aug. 8-10, and Oct. 26-28, 1957 (W. W. Brandt, Bishop Mus.); 1, Bisianumu, E. of Port Moresby, 500 m. (*c.* 1625 ft.), Sept. 24, 1955 (J. L. Gressitt, Bishop Mus.); 1, middle Fly R., 250-300 mi. up, July 1928 (Pemberton, Hawaiian Sugar Planters' Association); 1, Yule Is. (Hungarian National Mus.). **N-E. N. G.**: 4, Morobe District (2 specifically from Mt. Misim) (Stevens, M.C.Z.); 1, Koitakinumu, Central Division, April 1918 (J. T. Zimmer, Chicago Mus.); 1, Finschhafen, May 1944 (E. S. Ross, California Acad.); 6, Erima,

Astrolabe Bay, 1897 (Biró, Hungarian National Mus.); 4, Stephansort, Astrolabe Bay, 1897 (Biró, Hungarian National Mus.); 1, Simbang, Huon Gulf, 1898 (Biró, Hungarian National Mus.); 1, Sattelberg, Huon Gulf, 1899 (Biró, Hungarian National Mus.); 1, same locality (bought from Staudinger and Bang-Haas); 3, Bulolo, 1020 m. (*c.* 3300 ft.), Aug. 13, 17, 30, 1956 (E. J. Ford Jr., Bishop Mus.); 3, Wum 840 m. (*c.* 2730 ft.), July 16, 17, 1955 (J. L. Gressitt, Bishop Mus.); 1, Busu R., E. of Lae, 100 m. (*c.* 325 ft.), Sept. 14, 1955 (J. L. Gressitt, Bishop Mus.); 1, same locality, 12 km., Sept. 21, 1956 (E. J. Ford Jr., Bishop Mus.); 1, Tsenga, Upper Jimmi Valley, 1200 m. (*c.* 3900 ft.), July 15, 1955 (J. L. Gressitt, Bishop Mus.). **Neth. N. G.**: 15, Hollandia, Jan. and May 1945 (Malkin, U.S.N.M.); 1, same locality, July 1938 (Toxopeus, Leiden Mus.); 7, Waris, S. of Hollandia, 450-500 m. (*c.* 1450-1625 ft.), Aug. 1-2, 1-7, 8-15, 24-31, 1959 (T. C. Maa, Bishop Mus.); 1, Cyclops Mts., Hollandia area W. of Sentani, 50-100 m. (*c.* 150-325 ft.), June 22-24, 1959 (Gressitt and Maa, Bishop Mus.) taken in light trap; 4, Humboldt Bay District, 1937 (W. Stüber, British Mus.); 3, Maffin Bay, Aug. 1944 (Darlington); 4, same locality, July, Aug., Sept. 1944 (E. S. Ross, California Acad.); 1, Wasian (Vogelkop), Sept. 1939 (Wind, M.C.Z.). Also before me are 6 specimens from New Guinea from localities that I cannot find or without exact localities. The species is evidently common over the whole of New Guinea at low and moderate altitudes.

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. The specimens listed above vary considerably in size, proportions, and some other characters, but I cannot divide them into more than one recognizable species.

Just how *longipenne* is related to the common Oriental species I am not prepared to say. It is very similar to both *orientale* and *cucujoides*, which Andrewes considered the two principal species of *Morion* in the Orient and western Malay Archipelago. One character that vaguely separates *longipenne* from the Oriental forms is the sinuation of the outer edge of the lateral lobes of the mentum, but the sinuation varies from strong to almost absent in specimens from New Guinea, and it is present in some Oriental specimens.

Most specimens of *longipenne* that I have seen have the pronotum rather strongly margined anteriorly, from the angles ⅓ or ½ way in toward middle. However, of the specimens listed above, 2 from Morobe District (including 1 from Mt. Misim)

and Biró's specimen from Sattelberg have the anterior margin of pronotum almost obsolete, visible only near the angles, and these specimens also have eyes slightly larger than usual in *longipenne* and 7th elytral intervals scarcely elevated at base (degree of elevation varies in *longipenne*). These specimens may represent *d'albertisi* Chaudoir; but I am unable to decide whether the differences are really specific or just individual. The specimens in question are rather large, but equally large specimens with characters of *longipenne* occurred with the variants in the Morobe District. The variants have the outer edges of the mentum lobes sinuate, as in *longipenne*.

Whether *longipenne* occurs west of New Guinea remains to be seen, and in fact can be decided only when the synonymy of related forms is decided. Andrewes identified specimens as *cucujoides* from as far east as Celebes, Buru, and the Aru Is.; as *orientale*, east to Celebes; and I have specimens that seem to be *orientale* from Halmahera and Morotai Is. in the Moluccas. *M. longipenne* extends to tropical North Queensland, **Australia**.

Genus Mecyclothorax Sharp

Sharp 1903, Fauna Hawaiiensis **3**, p. 243.

Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 487 (see for additional references).

Britton 1948, Occasional Papers Bishop Mus. **19**, No. 4, pp. 107–166 (see for generic synonymy, and Hawaiian species).

Louwerens 1949, Verhandlungen naturforschenden Gesellschaft Basel **64**, p. 320 (key to Javan species).

Diagnosis. A very small pterostichine, unique (among the Pterostichini of New Guinea) in presence of a bristle in the scrobe (external sulcus) of each mandible.

Description. None needed here.

Genotype. Apparently not yet selected; must be one of the Hawaiian species included by Sharp (1903).

Generic distribution (*cf.* Britton 1948, p. 107). Australia (15 or more species, rather diverse in structure); St. Paul and Amsterdam Is. in the southern Indian Ocean (1 species, closely related to the ubiquitous *ambiguus* of southern Australia); New Zealand (1 species, at most a subspecies of *ambiguus*); New Guinea (1 high-mountain species, described below); Java (5 mountain-living species); New Caledonia (1 species); Hawaiian Is. (85 species, apparently evolved from 1 original stock); and Tahiti (4 species). Most of the Australian species occur in the

south-temperate part of the continent, but one (*?cordicollis* Sl.) extends north to the Atherton Tableland in tropical North Queensland.

Notes. The Australian species of *Mecyclothorax* are ground-living mesophiles which occur in leaf-debris etc. in both humid and dry country, usually not specifically by open water. Some have fully developed, others atrophied wings.

Mecyclothorax toxopei n. sp.

Description. Form (fig. 50) about average for genus, rather strongly convex; black, appendages dark brown; microsculpture indistinct on front, lightly impressed on neck and pronotum (somewhat transverse on latter), more deeply impressed (and almost isodiametric) on elytra. *Head* .76 width prothorax; eyes moderately prominent, genae behind them oblique, slightly arcuate; antennae with middle segments about 2X long as wide, pubescent from 4th segment; mandibles short, curved, each with a seta in scrobe; front convex, with short, broad, irregular impressions; 2 supraocular setae over each eye; mentum with strong rounded tooth. *Prothorax* rounded-subcordate; width/length 1.29; base/apex .98; base/head .86; sides arcuate through much of length, strongly converging posteriorly, not sinuate before base except slightly and obtusely notched just before angles; apex subtruncate, with angles close to neck and not advanced; base subtruncate, slightly sinuate each side; posterior angles broadly obtuse; lateral margins narrow anteriorly, broader toward base, each with usual 2 setae about $\frac{2}{3}$ from apex and just before basal angle; disc convex, with rather vague transverse anterior impression, fine middle line, and vague posterior transverse impression; baso-lateral impressions moderate, not sharply limited. *Elytra* quadrate-oval, subparallel at middle; width elytra/prothorax 1.50; humeri rather prominent but broadly rounded; subapical sinuations slight; anterior margin entire, faintly (very obtusely) angulate near humeri; striation almost entire except nearly obliterated externally and apically, striae moderately impressed on disc, slightly irregular but not distinctly punctate; intervals slightly convex on disc, 3rd 5- or 6-punctate (asymmetrical), 5th 3- or 4-punctate. *Inner wings* evidently reduced, although I have not attempted to raise an elytron of the single known specimen. *Lower surface* and *legs* not examined; they cannot be seen without remounting the specimen, and it seems unnecessary to risk it. *Secondary sexual*

characters not visible without remounting. *Measurements:* length 4.7; width 2.0 mm.

Type. Holotype ♂ (Leiden Mus.) from Wilhaminatop, Scree Valley Camp, 4200 m. (about 13,650 ft.), **Neth. N. G.**, Sept. 23, 1938 (L. J. Toxopeus). The label bears an additional note that I cannot decipher and that may indicate habitat.

Occurrence in New Guinea. Known only from the type.

Measured specimen. The type.

Notes. In Louwerens' key to the Javan species of *Mecyclothorax* (1949, p. 320), this runs to *lissus* Andrewes, but comparison shows that the new species differs from *lissus* in being duller, with microsculpture visible on pronotum as well as elytra (only on elytra in *lissus*), and in having extra dorsal punctures on 3rd and 5th elytral intervals. There are other small differences, not worth listing here. As compared with *cordicollis* Sloane, which is the most similar Australian species that I know, the new one differs in details of form, absence of punctures on base of pronotum, less punctate elytral striae, presence of additional dorsal punctures on 3rd and 5th intervals, much duller surface, etc. The occurrence of this genus in New Guinea was to be expected; additional species probably exist on other mountains there. And species of the genus are to be expected on Celebes, Borneo, and other islands of the archipelago with high mountains, although heretofore they have been found only on Java.

Genus BRACHIDIUS Chaudoir

Chaudoir 1852, Bull. Soc. Nat. Moscou **25**, Part 1, No. 1, p. 78.
Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 493 (see for additional references).

Diagnosis. See key to genera of Pterostichini. The single species of this genus is a rather small, very stout, compact, winged, black or brownish carabid distinguishable from all (superficially) similar species in New Guinea by position of the anterior-lateral prothoracic setae, almost on the anterior angles of prothorax.

Description. None needed here.

Genotype. B. crassicornis Chaudoir (see below).

Generic distribution. **Burma** etc. east and south to the **Philippines**, **New Guinea**, **New Britain**, and the **Solomons** (Bougainville Is., 1 in California Acad.), but not Australia.

Notes. If the current classification (Csiki) is correct, the only close relative of this genus is *Cratocerus* of Central and South America.

Brachidius crassicornis Chaudoir

Chaudoir 1852, Bull. Soc. Nat. Moscou **25**, Part 1, No. 1, p. 80.

Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 493 (see for synonymy and additional references).

Andrewes 1930, Cat. Indian Carabidae, p. 48.

Description. See diagnosis of genus, of which this is the only species. Proportions: head .60 and .62 width prothorax; prothoracic width/length 1.70 and 1.72, base/apex 1.31 and 1.28, base/head 1.51 and 1.49; width elytra/prothorax 1.20 and 1.22. *Measurements* (Dobodura series): length 6.4-8.1; width 2.8-3.5 mm. (Chimbu Valley specimen: 9.5 x 4.1 mm.).

Type. From **Timor**, now in Oberthür collection, Paris Mus.

Occurrence in New Guinea. **Papua**: 112, Dobodura, Mar.-July 1944 (Darlington); 1, Kokoda, 1200 ft., Aug. 1933 (Cheesman). **N-E. N. G.**: 1, Erima, Astrolabe Bay, 1896 (Biró, Hungarian National Mus.); 1, Chimbu Valley, Bismarck Range, 5000-7500 ft., Oct. 1944 (Darlington); 1, Torricelli Mts., Mokai Village, 750 m. (*c.* 2450 ft.), Jan. 1-23, 1959 (W. W. Brandt, Bishop Mus.); 8, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 2, Hollandia, July-Sept. 1944 (Darlington); 2, Maffin Bay, Aug. 1944 (Darlington); 1, same locality, Sept. 1944 (E. S. Ross, California Acad.); 1, Cyclops Mts., Sabron, Camp 2, 2000 ft., July 1936 (Cheesman); 2, Geelvink Bay, 1878 (Raffray and Maindron, Paris Mus.).

Notes. The range of the species outside New Guinea is, of course, the same as that of the genus. The single specimen from Chimbu Valley is exceptionally large, over 9 mm. long; the largest specimens from Dobodura are about 8 mm. This species was very common in rotting logs at Dobodura.

Genus Caelostomus Macleay

Macleay 1825, Annulosa Javanica, p. 23.

Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 496 (see for synonymy and additional references).

Straneo 1938, Ann. Mus. Civ. Genova (Genoa) **60**, pp. 5–100 (the Oriental including New Guinean species).

Diagnosis. Small, compact, convex, winged (in New Guinea) Pterostichini unique (among New Guinean pterostichines) in having elytron with puncture at base 3rd stria.

Description. None needed here.

Genotype. C. picipes Macleay.

Generic distribution. Africa and tropical Asia, north to Japan

and east and south to the Philippines, New Guinea etc., and tropical Australia.

Notes. I am indebted to Prof. Straneo for identification of selected specimens of this genus. Most species of the genus that I have collected were under bark or in rotten logs. However, *C. picipes* lives at least partly in a different habitat, in rotting or fermenting vegetation. It is sometimes very common, and is likely to be carried with vegetable material by man.

Key to the Species of Caelostomus of New Guinea

1. Prothorax with anterior-lateral setae present 2
— Prothorax without anterior-lateral setae (p. 509) ..... *novae-guineae*
2. Apex of elytra pale; sides of prothorax broadly rounded almost to base; lower surface closely punctate (p. 510) ..... *picipes*
— Apices of elytra not pale; sides of prothorax less rounded posteriorly, usually sinuate; lower surface less densely punctate 3
3. Metasternum (outer corners of it) more or less punctate (p. 510) *albertisi*
— Metasternum not punctate 4
4. Sides of prothorax variably but usually weakly sinuate before base; ratio base prothorax/head *c.* 1.39 and 1.38 (p. 511) ..... *subsinuatus*
— Sides of prothorax strongly sinuate before base, basal angles rectangular; ratio base prothorax/head 1.19 and 1.18 (p. 512) ..... *straneoi*

Caelostomus novae-guineae Straneo

Straneo 1938, Ann. Mus. Civ. Genova (Genoa) **60**, p. 48, fig. 33.

Description. A moderately large, black or brownish black, shining species with ferrugineous appendages, unique among New Guinea *Caelostomus* in lacking anterior-lateral prothoracic setae. Proportions: head .66 and .63 width prothorax; prothoracic width/length 1.30 and 1.28, base/apex 1.40 and 1.35; base/head 1.45 and 1.38; width elytra/prothorax 1.43 and 1.40. *Measurements:* length 5.3-7.0; width 2.3-2.9 mm.

Type. One specimen, sex not given, from Moroka, southeast New Guinea (presumably **Papua**), 1300 m. (about 4225 ft.), collected by Loria, now in Genoa Civic Mus.

Occurrence in New Guinea. **Papua**: the type. **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington); 1, lower Busu R., Huon Peninsula, April 12, 1955 (E. O. Wilson, M.C.Z.), taken in lowland rain forest; 3, Wamuki, Gemeheng, and Joangeng (1 from each), Mongi Watershed, Huon Peninsula, 300 to 800 m. (*c.* 975-2600 ft.), various dates in April 1955 (E. O. Wilson,

M.C.Z.); 11, Sattelberg, Huon Peninsula 1899 (Biró, Hungarian National Mus.).

Measured specimens. Small ♂ from lower Busu R., large ♀ from Gemeheng.

Notes. The records suggest that this species occurs only or chiefly toward the eastern end of New Guinea.

Caelostomus picipes Macleay

Macleay 1833, Annulosa Javanica, p. 123.

Straneo 1938, Ann. Mus. Civ. Genova (Genoa) **60**, p. 64 (see for synonymy and additional references).

Description. A brownish black *Caelostomus* characterized in the preceding key. It is immediately recognizable by the pale elytral apices. Proportions: head .69 and .66 width prothorax; prothoracic width/length 1.40 and 1.42, base/apex 1.26 and 1.28, base/head 1.26 and 1.31; width prothorax/elytra 1.49 and 1.46. *Measurements:* length 5.3-6.2; width 2.4-2.7 mm.

Type. From **Java**, now in British Mus.

Occurrence in New Guinea. **Papua**: 4, Dobodura, Mar.-July 1944 (Darlington); 2, Milne Bay, Dec. 1933 (Darlington); 3, Kokoda, 1300 ft., Oct., Sept. 1933 (Cheesman). **N-E. N. G.**: 2, Busu R., E. of Lae, 100 m. (*c.* 325 ft.), Sept. 13 and 15, 1955 (J. L. Gressitt Bishop Mus.); 7, Aitape, Aug. 1944 (Darlington); 1, Rawlinson Range (bought from Staudinger and Bang-Haas). **Neth. N. G.**: 1, Hollandia, Apr. 1945 (Malkin, U.S.N.M.); 1, same locality, Nov. 21, 1944 (Hoogstraal, M.C.Z.); 2, same locality, Dec. 1944 and Jan. 1945 (W. T. Nailon, borrowed from Prof. F. A. Fenton); 1, Cyclops Mts., Sabron, Camp 1, 1200 ft., May 1936 (Cheesman).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. C. picipes is widely distributed in the **Oriental Region**, extending north to **Japan** (as subspecies *japonicus*) and east and south through the **Malay Archipelago** to **New Guinea** etc. and tropical **Australia**. Its habits are mentioned in notes under the genus.

Caelostomus albertisi Straneo

Straneo 1938, Ann. Mus. Civ. Genova (Genoa) **60**, p. 73.

Description. An ordinary looking species of the genus, distinguished from others in New Guinea by characters given in the preceding key. Proportions: head .70 and .68 width prothorax; prothoracic width/length 1.23 and 1.26, base/apex (not

calculated) and 1.34; base/head 1.26 and 1.30; width elytra/prothorax 1.49 and 1.40. *Measurements:* length 5.2-7.0; width 2.1-2.7 mm.

Types. Described from 3 specimens from Katau, (**Papua**), collected by D'Albertis. The holotype is in Genoa Civic Mus.

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.-July 1944 (Darlington); 1, Palmer R. at Black R., June 7-14, 1936 (Archbold Exped., A.M.N.H.); 1, Kiunga, Fly R., Oct. 1-7, 1957 (W. W. Brandt, Bishop Mus.); 1, Bulolo, 1020 m. (*c.* 3300 ft.), Aug. 25, 1956 (E. J. Ford Jr., Bishop Mus.); 1, Laloki, Feb. 3, 1910 (F. Muir, Hawaiian Sugar Planters' Association). **N-E. N. G.**: 2, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 3, Hollandia, Apr. 1945 (Malkin, U.S.N.M.); 2, Cyclops Mts., Sabron, Camp 1, 1200 ft., May 15, 1936 (Cheesman); 1, Fac Fac, June 1939 (Wind. M.C.Z.).

Measured specimens. A ♂ from Aitape and large ♀ from Dobodura.

Notes. This species varies considerably in size and somewhat in other characters, but I cannot divide it satisfactorily. The punctures of the outer corners of the metasternum are usually obvious but sometimes almost lacking, and in that case specimens must be identified from the combination of other characters. The species occurs also on the Cape York Peninsula of **Australia**.

Caelostomus subsinuatus (Chaudoir)

Chaudoir 1883, in Oberthür, Coleop. Novitates **1**, p. 38 (*Drimostoma*).
Straneo 1938, Ann. Mus. Civ. Genova (Genoa) **60**, p. 81.
rectangulus Andrewes 1930 in part (not Chaudoir), Cat. Indian Carabidae, p. 57 (New Guinean record is based on *subsinuatus*, *t.* Straneo 1938).
?loriai Straneo 1938, Ann. Mus. Civ. Genova (Genoa) **60**, p. 76.

Description. Another "ordinary" *Caelostomus*, distinguished by impunctate metasternum and other characters given in preceding key. Proportions: head .63 and .64 width prothorax; prothoracic width/length 1.29 and 1.37, base/apex 1.30 and 1.34, base/head 1.39 and 1.38; width elytra/prothorax 1.37 and 1.36. *Measurements:* length *c.* 5.1-6.9; width 2.1-2.7 mm.

Types. Of *subsinuatus*, from Fly R., (presumably **Papua**); of *loriai*, from "S. E. Paumomu Riv. (Loria): Papuasia, Mafulu (L. E. Cheesman)." I have not found either locality. The holotype, presumably from Paumomu R., is in Genoa Civic Mus.

Measured specimens. A pair (♂ ♀) from Dobodura.

Occurrence in New Guinea. **Papua**: 20, Dobodura, Mar.-July

1944 (Darlington); 3, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 1, Bisianumu nr. Segeri, 500 m. (*c.* 1625 ft.), Mar. 15-20, 1955 (E. O. Wilson, M.C.Z.) taken in rain forest; 1, Milne Bay, Dec. 1943 (Darlington); 1, Normanby Is., Wakaiuna, Sewa Bay, Nov. 11-20, 1956 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 3, Nadzab, July 1944 (Darlington); 1, Finschhafen, Apr. 21, 1944 (E. S. Ross, California Acad.); 1, Erima, Astrolabe Bay, 1897 (Biró, Hungarian National Mus.); 12, Aitape, Aug. 1944 (Darlington); 1, Bulolo, 1000 m. (*c.* 3250 ft.), Aug. 21, 1956 (E. J. Ford Jr., Bishop Mus.); 1, Tsenga, upper Jimmi Valley, 1200 m. (*c.* 3900 ft.), July 14, 1955 (J. L. Gressitt, Bishop Mus.). **Neth. N. G.**: 1, Maffin Bay, Aug. 1944 (Darlington); 2, same locality, July and Sept. 1944 (E. S. Ross, California Acad.); 1, Ifar, 300-600 m. (*c.* 975-1950 ft.), June 20, 1959 (J. L. Gressitt, Bishop Mus.); 1, Biak Is., Kampong Landbouw, 50-100 m. (*c.* 150-325 ft.), May 28, 1959 (J. L. Gressitt, Bishop Mus.); 1, Bomberi, Vogelkop, 700-900 m. (*c.* 2275-2925 ft.), June 8, 1959 (J. L. Gressitt, Bishop Mus.); 1, Waigeu Is., Camp 1, Mt. Nok, 2500 ft., May 1938 (Cheesman).

Notes. Straneo (1938, p. 21, in key) distinguishes *loriai* from *subsinuatus* by size and perhaps by form of prothorax, although the latter character is not clear. However, the size difference is not great: according to Straneo, *loriai* is 5.8 mm. long, *subsinuatus* 5.4. My series covers both these measurements and does not seem to divide into two species of different sizes, and I cannot find other characters to divide the series. One of my specimens of *subsinuatus* has been identified by Straneo.

The specimen from Bomberi (Vogelkop) is near maximum size for the species, wider (prothoracic width/length 1.50), and with elytral striae less impressed than usual. It may represent a separate species, but I do not want to describe it from the single, somewhat damaged specimen. It does not answer the description of *loriai* as compared with *subsinuatus*.

Caelostomus straneoi n. sp.

Description. Form (fig. 49) about average in genus, moderately convex; dark brown, appendages not much paler; microsculpture faint, isodiametric on front, somewhat transverse on pronotum, very faint but transverse on elytral intervals. *Head* .67 and .66 width prothorax; eyes moderately prominent, enclosed behind by short genae slightly arcuate in profile and about ¼ as long as eyes; antennae with middle segments slightly

longer than wide (not including pubescence); frontal impressions fine, sinuous, strongly converging anteriorly, ending posteriorly about mid-eye level; mentum with strong, bluntly rounded tooth. *Prothorax* subcordate, less narrowed anteriorly and more narrowed posteriorly than usual; width/length 1.39 and 1.38; base/apex 1.17 and 1.15; base/head 1.19 and 1.18; sides rather broadly and irregularly arcuate in about anterior ¾, broadly and rather strongly sinuate before base; apex subtruncate or very broadly emarginate, with anterior angles rounded, not advanced; base subtruncate; basal angles well defined, almost right; lateral margins narrow, each with seta about ⅖ from apex and at basal angle; disc rather weakly convex; anterior transverse impression vague, middle line fine except broader and deeper in basal ⅓; baso-lateral impressions sublinear, deep, curving slightly inward anteriorly, less than ½ length of prothorax. *Elytra* subquadrate, much wider than prothorax (E/P 1.42 and 1.43); basal margin entire or nearly so (but very fine inside base 3rd stria), obtusely subangulate at humeri; striae entire, moderately impressed, punctulate. *Inner wings* fully developed. *Lower surface* only partly and sparsely punctate: proepisterna impunctate or nearly so; metepisterna punctate, but not wings of metasternum; ventral segments rather sparsely punctate at sides, not margined. *Legs* without obvious unusual characters. *Secondary sexual characters* normal for genus: ♂ with front tarsi not modified; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements:* length 4.8-5.0; width 2.0-2.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,216) and one ♀ paratype both from Dobodura, Papua, Mar.-July 1944 (Darlington).

Measured specimens. The types.

Notes. A specimen of this species was submitted to Prof. Straneo some years ago and returned with the note "*prope subsinuatus.*"

Genus COSMODISCUS Sloane

Sloane 1907, Proc. Linn. Soc. New South Wales **32**, p. 371.
Andrewes 1920, Ann. Mag. Nat. Hist. (9) **5**, p. 445.

Diagnosis. Small, very broad pterostichines with short, strongly curved mandibles, abruptly prominent eyes, prothoracic baso-lateral foveae single and linear, elytra without scutellar striae, with basal puncture at base 2nd stria, and 3rd interval impunctate.

Description. None required here. See references.

Genotype. C. rubripictus Sloane of Australia etc.

Generic distribution. Southeast Asia, Japan, Formosa, Sumatra, Java, Bali, Mindanao, vicinity of Celebes, New Guinea, Kei and Aru Is., and tropical northeastern Australia; and probably other islands between Asia and Australia.

Notes. The two species of this genus that I have collected were found among dead leaves and debris on the ground in rain forest.

Key to Species of Cosmodiscus of New Guinea

1. Black with red elytral marks; slightly broader, prothorax more narrowed anteriorly (base/apex 1.46 and 1.50) (p. 514) *rubripictus*
— Brown, without markings; slightly narrower, prothorax relatively less narrowed in front (base/apex 1.31 and 1.28) (p. 515) *brunneus*

Cosmodiscus rubripictus Sloane

Sloane 1907, Proc. Linn. Soc. New South Wales **32**, p. 371.
Sloane 1920, Proc. Linn. Soc. New South Wales **45**, p. 322.
Andrewes 1920, Ann. Mag. Nat. Hist. (9) **5**, pp. 445, 447.

Description. A rather shining black *Cosmodiscus* with somewhat variable red marks on elytra including humeral patches and an irregular fascia or separated spots near top of declivity. Proportions: head .55 and .54 width prothorax; prothoracic width/length 1.69 and 1.71, base/apex 1.46 and 1.50, base/-head 1.62 and 1.66; width elytra/prothorax 1.17 and 1.18. *Measurements* (of specimens from New Guinea): length 5.8-7.0; width 2.6-3.1 mm. (The length of the type, from Australia, given by Sloane as 7.7 mm.)

Type. From Kuranda, North Queensland, **Australia**, collected by Dodd, in Sloane collection, Canberra.

Occurrence in New Guinea. **Papua**: 2, ♂ ♀, Dobodura, Mar.-July 1944 (Darlington).

Measured specimens. The pair from Dobodura.

Notes. Sloane (1920) and Andrewes say that specimens from the **Aru** and **Kei Is.** are smaller than the type, as are those from 68 MCZ Darlington 8521 MM8 Nov2
New Guinea. I have not made a direct comparison, but, except for size, my specimens answer the description well.

I have examined (at British Mus., in 1947) the type of *C. rufolimbatus* Jedlicka (1936, *Acta Soc. Ent. Czechoslovakia* **33**,

p. 103) from Mindanao and a paratype of *C. louwerensi* Straneo (1940, *Boll. Zool. Unione Italiana* **11**, p. 215), from Saleier Is. S. of Celebes. Both seem to me to be forms of *rubripictus*, but I do not care to synonymize them without seeing more material and establishing the limits of variation in different localities.

Cosmodiscus brunneus n. sp.

Description. Form (fig. 51) about average for genus, slightly narrower and more subquadrate (less oval) than *rubripictus;* brown, head and pronotum darker, elytra not spotted, appendages brown; rather shining, reticulate microsculpture indistinct on front, faint and transverse on disc of pronotum, more distinct and transverse on elytra. *Head* .62 and .64 width prothorax; eyes abruptly prominent as usual in genus; mandibles strongly curved, striolate; antennae rather short (as usual), middle segments (not including pubescence) slightly longer than wide; front moderately convex; clypeal suture slighty impressed; frontal foveae short, sublinear, diverging posteriorly; front faintly and finely punctulate (seen at 100X); mentum with strong, acute tooth. *Prothorax* transverse, more narrowed in front than behind but less so than in *rubripictus;* width/length 1.59 and 1.55; base/apex 1.31 and 1.28; base/head 1.40 and 1.39; base faintly 3-sinuate, faintly lobed behind each basal fovea; apex broadly emarginate but anterior angles not otherwise advanced; sides rather weakly arcuate, nearly straight (and converging) posteriorly; apex and sides margined, base not; each side margin with usual 2 setae about $\frac{2}{5}$ from apex and at basal angle; basal angles obtuse but distinct, slightly blunted; anterior transverse impression of disc slight and short, middle line lightly impressed but reaching base or nearly so; basolateral impressions linear, about $\frac{1}{3}$ long as pronotum, slightly nearer middle than sides; surface of disc finely punctulate (more distintly so than front). *Elytra* subquadrate, about $\frac{1}{4}$ wider than prothorax (E/P 1.22 and 1.28); humeri rounded-prominent, not dentate; sides subparallel for much of length, then rounded to apices, with slight subapical sinuations; margins entire at base, rounded at humeri; striae entire, deeply impressed, not punctate; basal puncture at or slightly inside base 2nd stria; 3rd interval without fixed punctures. *Lower surface:* proepisterna not punctate but sides of body extensively punctate otherwise; ventral segments not margined anteriorly. *Legs* (♂)

generally similar to those of *rubripictus*. *Secondary sexual characters* (of ♂): anterior tarsi rather widely dilated, with segments approximately symmetrical and first 3 biseriately squamulose; 1 seta each side last ventral segment; ♀ unknown. *Measurements:* length 7.1-7.5; width 3.0-3.2 mm.

Types. Holotype ♂ (M.C.Z. No. 30,217) and 3 ♂ ♂ paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington); 1 ♂ paratype, Kokoda, **Papua**, 1200 ft., Sept. 1933 (Cheesman); 1 ♂ paratype, lower Busu R., Huon Peninsula, **N-E. N. G.**, May 12, 1955 (E. O. Wilson, M.C.Z.) taken in lowland rain forest; 1 ♂ paratype, Sattelberg, **N-E. N. G.**, 1899 (Biró, Hungarian National Mus.).

Measured specimens. The holotype and 1 paratype from Dobodura.

Notes. In Andrewes' key (1920, see reference under genus) to the species of *Cosmodiscus,* this would run to couplet 2 (3), but differs from *platynotus* Bates in having humeri not dentate (and in many other details) and from *rubripictus* as indicated in the key and description above. It is probably closer to *umeralis* Andrewes (1937, *Bull. Ann. Soc. Ent. Belgique* **77**, p. 38) of Bali, but, as compared with Andrewes' type, the present new species is more slender, with prothorax less narrowed anteriorly and with posterior angles not denticulate. The 2 other described species of the genus are closer to *rubripictus* and are mentioned in notes thereunder.

Genus Homalonesiota Maindron

Maindron 1908, Nova Guinea **5**, p. 295.

Diagnosis. A pterostichine which at first sight looks like a very small, dull *Morion,* but with different head, more slender legs and antennae, and very different technical characters (see Andrewes, reference cited under following species).

Description. None required here. See again Andrewes.

Genotype. Homalonesiota karawari Maindron (see below).

Generic distribution. Known only from the type from New Guinea.

Notes. I have not seen this genus. It was something of a mystery to Andrewes even after he examined the specimen on which it was based. I have placed it in the key to genera (p. 499) according to characters given by Andrewes. It seems possible that it is related to *Cosmodiscus,* but, if so, it is surprising that Andrewes did not recognize the relationship.

Homalonesiota karawari Maindron

Maindron 1908, Nova Guinea **5**, p. 296.
Andrewes 1946, Proc. R. Ent. Soc. London (B) **15**, p. 85.

Description. None required here. See generic diagnosis, and Andrewes' redescription of type. Andrewes gives length as 10, width as 3 mm.

Type. A ♀ from Tawarin, **New Guinea**, June 1903. It was examined by Andrewes "in Mr. Guy Babault's collection in 1922, and [it is] therefore no doubt now in the Paris Museum."

Occurrence in New Guinea. Known only from the type.

Measured specimens. None.

Notes. See "*Notes*" under the genus. The type locality, "Tawarin" (River), is on the north coast of **Neth. N. G.** about 50 miles west of Hollandia.

Genus Abacetus Dejean

Dejean 1828, Spécies Général Coleop. **3**, p. 195.
Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 502 (see for additional references and synonymy).
Andrewes 1942, Proc. R. Ent. Soc. London (B) **11**, pp. 21–35 (the Indian species).
Straneo 1958, South African Animal Life (Results Lund U. Expedition 1950–1951) **5**, pp. 344 ff. (see for some other recent references; subgenera).

Diagnosis. Small (4.7-6.8 mm.), winged (in New Guinea), water-loving (in New Guinea) pterostichines; antennae with segment 2 inserted in apex of segment 1 more eccentrically than usual; scutellar stria absent; elytra with 3rd interval 1-punctate; ♂ front tarsi with segments not oblique. The 2 common New Guinean species (but not the doubtful *convexiusculus*) are distinguished from all other small pterostichines on the island by possession of prothoracic stridulating files, each file composed of about 12 or more short transverse costae in a longitudinal row on the proepisternum near its inner edge anteriorly. The files are present in both sexes.

Description. None needed here.

Genotype. A. gagates Dejean of Africa.

Generic distribution. The warmer part of the Old World, north to Europe and Japan and east and south to the Philippines, New Guinea etc., and Australia.

Notes. Abacetus includes many species in Africa and southern Asia, fewer in Australia, and only 2 or 3 in New Guinea. Of the New Guinean species, one (*haplosternus*), represents a

widely distributed species (or group of closely related species) that ranges from India etc. to Australia, and another (*strancoi*) is apparently a slight local modification of the same stock. Both occur among dead leaves and in other cover in very wet places. A third, quite different species (*convexiusculus*) is doubtfully recorded from the western tip of New Guinea.

Key to Species of Abacetus of New Guinea

1. Pronotum with base coarsely punctate, and linear baso-lateral foveae joined to marginal gutters posteriorly by strongly curved impressed lines; prothoracic stridulating files absent (p. 521) *convexiusculus*
— Pronotum with base not or indistinctly punctate, with baso-lateral foveae not joined to marginal gutters as described; prothoracic stridulating files present 2
2. Sides of prothorax usually moderately or strongly (rarely weakly) sinuate before base, and relatively widely margined, the reflexed side margins at base usually nearly as wide as distance between their inner edges and the baso-lateral impressions (p. 518) *haplosternus*
— Sides of prothorax weakly or not sinuate, and with narrower margins (p. 519) ..... *strancoi*

Abacetus haplosternus Chaudoir

Chaudoir 1878, Bull. Soc. Nat. Moscou **53**, Part 2, No. 3, p. 25.
Andrewes 1942, Proc. R. Ent. Soc. London (B) **11**, p. 25 (in key).
(Pertinent references only.)

Description. A medium-sized black *Abacetus* with cordate prothorax; middle and hind tarsi not pluri-sulcate; front tibial spur not trifid; frontal furrows curving outward posteriorly toward anterior supraocular setae, not prolonged beyond mid-eye level; metepisterna long; prothorax without basal margin, linear baso-lateral foveae not joining marginal gutters at base; prothoracic margins wide; elytral striae not distinctly punctate (characters selected from Andrewes' key); and prothoracic stridulating files present. Proportions: head .64 and .66 width prothorax; prothoracic width/length 1.21 and 1.20, base/apex 1.09 and 1.12, base/head 1.10 and 1.10; width elytra/prothorax 1.33 and 1.36. *Measurements:* length *c.* 5.4-6.8; width *c.* 2.0-2.5 mm.

Type. From Bangkok, **Siam**, in Oberthür collection, Paris Mus.

Occurrence in New Guinea. **Papua**: 42, Dobodura, Mar.-July 1944 (Darlington); 9, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 2, Lake Daviumbu, Fly R., Aug. 19-30 and Sept. 11-20, 1936 (Archbold Expedition, A.M.N.H.). **N-E. N. G.**: 5, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 142, Hollandia, July-Sept. 1944 (Darlington); 1, Maffin Bay, Aug. 1944 (Darlington); 10, Sansapor (Vogelkop), Aug. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. Andrewes records *haplosternus* from **India**, **Siam**, the **Malay Peninsula**, and **Sumatra**, and I can find no definite characters to separate my series from the **Philippines**, Morotai in the **Moluccas**, **New Guinea**, western **New Britain**, and northeastern **Australia**. However, there is both individual and geographical variation in (for example) exact form of prothorax, and careful study of the whole assemblage from localities outside as well as in New Guinea may show that more than one species is involved. Such a study is beyond the scope of the present work. For further notes on geographical variation of the present species see under the following one.

Abacetus straneoi n. sp.

Description. A medium-sized, moderately convex *Abacetus* with prothorax narrowed posteriorly (form as figured, fig. 52); black, appendages brownish red; rather shining, elytra not or at most faintly iridescent; microsculpture isodiametric or slightly transverse on head and pronotum, finer and more transverse on elytra. *Head* .66 and .63 width prothorax; eyes moderately prominent, genae short, forming slightly obtuse angles with neck; antennae pubescent from 4th segments, with middle segments (not including pubescence) nearly 3X long as wide; front evenly convex except for short sublinear frontal foveae which curve outward posteriorly toward anterior supraocular setae; mentum with a rather long, simple tooth at middle. *Prothorax:* width/length 1.24 and 1.27; base/apex 1.11 and 1.10; base/head 1.15 and 1.15; base subtruncate except slightly oblique at sides; apex subtruncate or very broadly emarginate, with anterior angles not otherwise advanced; sides broadly rounded anteriorly, nearly straight and converging posteriorly, sometimes slightly sinuate; margins rather narrow, slightly wider posteriorly; posterior angles well defined but obtuse, except denticulate; disc with anterior transverse impression almost obsolete; middle line normally impressed but abbreviated at both ends;

baso-lateral impressions linear, parallel, about midway between middle and sides of pronotum and about ⅓ as long as latter, not or only vaguely connected with marginal gutters posteriorly. *Elytra* about ⅓ wider than prothorax (E/P 1.34 and 1.32); humeri in profile rounded but normally prominent; basal margin entire, obtusely angulate at humeri; striae rather deep, entire, not distinctly punctate; 3rd interval with puncture on inner edge behind middle. *Inner wings* fully developed. *Lower surface* impunctate but with well impressed, mostly isodiametric microsculpture; metepisterna long; stridulating files present. *Legs:* normal; tarsi not striolate and not distinctly sulcate; spur of front tibia not trifid; 5th tarsal segments without accessory setae. *Secondary sexual characters* normal. *Measurements* (types): length *c.* 5.0-5.7; width *c.* 1.9-2.1 mm. (Lake Daviumbu specimens are larger).

Types. Holotype ♂ (M.C.Z. No. 30,218) and 14 paratypes from Dobodura, Papua, Mar.-July 1944 (Darlington); 12 paratypes from Oro Bay (near Dobodura), Dec. 1943-Jan. 1944 (Darlington).

Other material. Papua: 14, Lake Daviumbu, Fly R., Aug. 19-30, Sept. 11-20, and Sept. 21-30, and 4, Palmer R. at Black R., June 15-22, 1936 (all Archbold Expedition, A.M.N.H.) probably taken at light. Also 1 from Linga Linga Plain W. of Willaumea Peninsula, New Britain, 1 m. altitude, Apr. 9, 1956 (J. L. Gressitt, Bishop Mus.) collected in light trap.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. My specimens of *Abacetus* from Dobodura and Oro Bay clearly divide into two groups as indicated in the key (above), and so do those from Lake Daviumbu. The numerous specimens of the genus from farther west in New Guinea do not seem to divide in this way, although they vary somewhat individually, and they tend to be intermediate between the two eastern forms, but closer to *haplosternus*. I am interpreting this as a case of character displacement in eastern New Guinea, although other explanations are possible.

At least three species that seem to be more or less related to *haplosternus* occur on the Cape York Peninsula, Australia (collected by me in 1958), but the present new one seems different from them all.

Abacetus convexiusculus Chaudoir

Chaudoir 1869, Bull. Soc. Nat. Moscou **42**, Part 1, No. 2, p. 385 (erroneously numbered 395).

Tschitschérine 1900, Horae Soc. Ent. Rossicae **34**, p. 286.

Andrewes 1933, Tijdschrift Ent. **1933**, p. 325.

Description. A medium-small, aeneous black, very convex *Abacetus* with rounded-cordate prothorax, distinguished (in New Guinea) by characters given in the preceding key. Proportions: head .65 and .68 width prothorax; prothoracic width/length 1.22 and 1.20, base/apex 1.04 and 1.00, base/head 1.03 and .93; width elytra/prothorax 1.35 and (not calculated). *Measurements:* length 4.7-5.5; width 1.9-2.1 mm.

Type. From **Celebes** (Wallace), now in Oberthür collection, Paris Mus.

Occurrence in New Guinea. Recorded by Tschitschérine from **Salawati Island** off the western tip of New Guinea. The only specimens I have seen that purport to come from New Guinea itself are labeled as from Dor(e)y and are therefore doubtful (see p. 331).

Measured specimens. Two ♀ ♀ from Dor(e)y.

Notes. A. convexiusculus is the easternmost member of a primarily Oriental species-group which is not directly related to *haplosternus* etc.

Genus Lesticus Dejean

Dejean 1828, Spécies Général Coleop. **3**, p. 189.

Sloane 1907, Deutsches Ent. Zeitschrift **1907**, pp. 470-472 (including key to species of New Guinea and Australia).

Kuntzen 1914, Sitzungsberichte Gesellschaft naturforschender Freunde Berlin **1914**, pp. 41 ff. (zoögeography of subtribe and genus).

Csiki 1929, Coleop. Cat., Carabidae, Harpalinae **3**, p. 518 (see for additional references and subgenera).

Pseudaloma Straneo 1938, Mem. Soc. Ent. Italiana **16**, p. 226 (new synonym).

Diagnosis. The group to which this genus belongs is defined by technical characters of the mouth-parts that need not be given here. The genus can be identified in New Guinea by characters given in the key on page 499. This genus includes the largest Carabidae in New Guinea excepting the enormous *Catadromus tenebroides*, but this emphasizes the small size of most New Guinean Carabidae rather than the large size of *Lesticus*,

for the largest *Lesticus* in New Guinea is only one inch long.

Description. None required here.

Genotype. L. janthinus Dejean, of Java.

Generic distribution. Southern Asia, north to North China and Japan, and across the Malay Archipelago to the Philippines, New Guinea, the Solomons, and northeastern Australia.

Notes. This genus represents the subtribe Trigonotomina, which is confined to the Oriental-Australian area. The only other large genus of the subtribe is *Trigonotoma*, which includes many species in southern Asia and the western part of the Malay Archipelago and which extends east to the Philippines, Celebes, and the Moluccas (Ternate), but not to New Guinea. Some species of *Trigonotoma* are flightless, localized on high mountains, as some species of *Lesticus* are in New Guinea. This is of course a matter of local differentiation and adaptation, including wing atrophy, in each special case.

I have examined the unique type of *Pseudaloma andrewesi*, from Sumbawa, and so far as I can see it is simply a *Lesticus* which has undergone wing-atrophy and become modified for a flightless existence. It is almost exactly matched in generic (but not specific) characters by *Lesticus toxopei* and *ambulatus* from New Guinea, except that the labrum is pointed at middle in *andrewesi* but not in the New Guinean species. The original description of *Pseudaloma andrewesi* states that the 3rd elytral interval is impunctate, but this is an error; the 3rd intervals of the type are 2-punctate, the anterior puncture being less than ¼ from base attached to 3rd stria, the posterior somewhat behind middle attached to 2nd stria. The prosternal process of the type has several punctures at apex and was probably once setose, and the last 3 ventral segments are transversely impressed near base as usual in *Lesticus*. I mention this genus here because the two New Guinean species named above might have to be referred to it, if it were recognizable.

Some of the New Guinean species of *Lesticus* vary so much both individually and geographically that they cannot be properly understood without study of more material than is now available. It will also be necessary to see some of the older types to assign the names properly—but there is little use studying the types without adequate material for reference. My treatment of the genus is therefore tentative.

The species of *Lesticus* that I have collected were under various sorts of cover on the ground in damp places (but not specifically beside open water), usually in rain forest.

One species of *Lesticus* that has been listed from New Guinea probably does not occur there. It is

(LESTICUS BENNIGSENI Sloane)

Sloane 1907, Deutsche Ent. Zeits. **1907**, pp. 471, 472.
Kuntzen 1914, Sitzungberichte Gesellschaft naturforschender Freunde Berlin **1914**, pp. 48, 49.

Notes. This species need not be discussed here except to note that the type came from Herbtshohe, Gazelle Peninsula, which is on the island of **New Britain**, not New Guinea. I have before me a specimen from "Neu-Pommern" (= New Britain), borrowed from the Hungarian National Mus., which fits the description and which seems to represent a species that I have not seen from New Guinea.

I am unable to recognize the following *Lesticus* described from New Guinea.

LESTICUS LEMOULTI Kuntzen

Kuntzen 1913, Ent. Rundschau **30**, p. 11.
—— 1914, Sitzungsberichte Gesellschaft naturforschender Freunde Berlin **1914**, pp. 48, 49.

Description. Rather large; dark, head and pronotum copper-greenish-bronze, elytra blue-green with violet reflections at sides and blue-black margins; prothorax probably cordate, about equally wide in front and behind; elytra with punctate striae, deeper laterally and apically, and 3rd interval 2- or 3-punctate; proepisterna heavily punctate; length 21.7 mm. For additional details see original description.

Type. From Yule Is., south coast of **Papua**, received from Le Moulte, now presumably in Berlin University Zool. Mus.

Occurrence in New Guinea. Known only from the type. But the species will probably prove to be known elsewhere under another name.

Notes. This species is not included in the following key. Kuntzen says it is near *bennigseni* Sloane, which he did not know. He compared it also with *nitescens*.

Key to Species of Lesticus of New Guinea

1. Metepisterna longer, outer edge 1½× or more as long as anterior edge; wings usually (not always) fully developed; proepisterna often (not always) punctate 2

— Metepisterna shorter, outer edge (not including posterior lobes) not or not much longer than anterior edge; wings reduced; proepisterna not punctate 5

2. Apices of elytra pointed or subdenticulate, the points usually a little removed from suture so apices briefly dehiscent; (winged; eyes relatively large; proepisterna usually but not always punctate) (p. 524) *gracilis*

— Elytra not pointed or subdenticulate; (other characters variable, but often not as above) 3

3. Intervals 7 and 8 strongly convex toward apex; large (*c.* 24 mm.), broad, slightly depressed; sides of prothorax straight (and converging) or only slightly sinuate posteriorly; elytra with striae very fine or faint on disc, but striae 7 and 8 deeper and punctate; (wings full or reduced; proepisterna punctate or not) (p. 526) ..... *politus*

— Intervals 7 and 8 usually not strongly convex toward apex; if these intervals convex, other characters not as above 4

4. Winged (p. 527) ..... *chloronotus*

— Wings reduced (and elytra somewhat narrowed anteriorly) (p. 528) *nitescens*

5. Prothorax very wide anteriorly, with sides strongly converging but only slightly sinuate posteriorly; form depressed (p. 529) ..*depressus*

— Prothorax not very wide anteriorly; form less depressed 6

6. Prothorax with lateral margins widening only near base; elytral 3rd interval with only 1 fixed puncture or none; elytral margins without subapical interruptions (p. 530) ..... *toxopei*

— Prothorax with lateral margins widening from about anterior setae to base; elytral 3rd interval 2- or 3-punctate; elytral margins with subapical interruptions (p. 531) ..... *ambulator*

Lesticus gracilis n. sp.

Description. Form about average for genus but legs and antennae a little more slender than usual; moderately convex; black, appendages (especially outer segments of antennae) partly brownish; a little less shining than usual, especially elytra of ♀; reticulate microsculpture not visible on front, faint or indistinct on pronotum, fine but very distinct and nearly isodiametric on elytra. *Head* .69 and .70 width prothorax; eyes large and prominent (in genus), genae short and oblique; antennae with middle segments 3X or slightly more long as wide; mandibles strongly curved and acutely produced as usual; front transversely impressed between anterior parts of eyes; frontal foveae rather deep, short, irregular, but with linear grooves behind them; neck deeply tranversely impressed between posterior edges of eyes; clypeal suture fine; clypeus subtruncate at

middle, slightly advanced at sides; labrum broadly emarginate; surface of front finely and inconspicuously punctulate. *Prothorax* cordate; width/length 1.42 and 1.46; base/apex 1.12 and .99; base/head 1.01 and .90; sides rather strongly rounded through much of length, variably (often rather strongly) sinuate before base; base subtruncate except slightly lobed each side; apex broadly emarginate, but angles otherwise scarcely advanced; lateral margins moderate, of about equal width throughout, each with usual 2 setae about 2/5 from apex and almost on basal angle; basal angles more or less obtuse, blunted; disc with anterior and posterior transverse impressions weak, middle line finely impressed and not quite reaching base or apex; basolateral impressions rather shallow, poorly defined, impunctate or subpunctate. *Elytra* somewhat wider than prothorax (E/P 1.21 and 1.21), only slightly narrowed anteriorly; humeri rounded-prominent; margins ending inwardly at end 3rd striae, obtusely angulate at humeri; apices pointed or denticulate, the points usually a little outside suture so apices briefly dehiscent; striae distinct but rather lightly impressed on disc, deeper laterally and apically, faintly punctulate on disc, more distinctly so laterally; 7th and 8th intervals strongly convex before apex; 3rd intervals 3-punctate, anterior puncture on or near 3rd stria, others on or near 2nd stria. *Inner wings* fully developed. *Lower surface:* prosternal process nearly flat, without setae; metepisterna long (in genus); proepisterna usually punctate but variably so, the punctures sometimes lacking on one or both sides; mes- and metepisterna and sides of metasternum punctate; sides of abdomen not punctate except along basal sutures; 3 last ventral segments deeply transversely impressed basally. *Legs* normal except somewhat longer and more slender than usual. *Secondary sexual characters* normal for genus; ♂ with anterior tarsi moderately dilated, first 3 segments conspicuously squamulose below and 4th segment sometimes inconspicuously so. *Measurements:* length *c.* 17-22; width *c.* 6-8 mm.

Types. Holotype ♂ (Leiden Mus.) and 3 paratypes from Bernhard Camp, Snow Mts., **Neth. N. G.**, 50 m. (*c.* 150 ft.), July-Sept. 1938 (J. Olthof), and additional paratypes from **Neth. N. G.** as follows: 4, Baliem Camp, Snow Mts., 1600 m., Dec. 1938 (Toxopeus); 1 ♂, Hollandia, Apr. 1945 (Malkin, U.S.N.M.); 1 ♀, same locality, July-Sept. 1944 (Darlington). Paratypes in M.C.Z.: No. 31,219.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Bernhard Camp.

Notes. This species seems reasonably well defined by the combination of characters given in the key, the acute apices of the elytra being of course most important.

Lesticus politus Chaudoir

Chaudoir 1868, Ann. Soc. Ent. Belgique **11**, p. 156.
Macleay 1886, Proc. Linn. Soc. New South Wales **11**, p. 141.
Tschitschérine 1900, Horae Soc. Ent. Rossicae **34**, p. 180.
Sloane 1907, Deutsche Ent. Zeits. **1907**, p. 472.
Kuntzen 1911, Ent. Rundschau **28**, p. 165.
—— 1914, Sitzungsberichte Gesellschaft naturforschender Freunde Berlin **1914**, pp. 48 ff.

Description. None needed here. This is the largest *Lesticus* in New Guinea; its characters are summarized in the key (p. 523); and it is compared with other species in notes (below). Proportions: head .67 and .72 width prothorax; prothoracic width/length 1.41 and 1.42, base/apex 1.00 and .95, base/head 1.00 and .88; width elytra/prothorax 1.23 and 1.25. *Measurements* (both specimens here listed): length *c.* 24; width *c.* 9 mm.

Type. A ♂ supposedly from New Guinea collected by Wallace, presumably now in Oberthür collection at Paris Mus. As usual in the case of Wallace's specimens (p. 331), "New Guinea" must be accepted with reservation. The specimen may have come from Celebes. If it did come from New Guinea, it was presumably from western **Neth. N. G.**, from the Vogelkop.

Occurrence in New Guinea. **N-E. N. G.**: 1 ♀, Erima, Astrolabe Bay, 1897 (Biró, Hungarian National Mus.); and recorded by Kuntzen (1911) from Hatzfeldt Harbor ("Hatzfeldhafen"). **Neth. N. G.**: 1 ♀, "Neth. New Guinea" without further locality, Sept. 10, 1944 (T. Aarons, California Acad.).

Measured specimens. The 2 ♀ ♀ recorded above.

Notes. These specimens are identified from description but answer the description well. They are larger and broader than the largest individual of *graeilis* (above), more shining, with relatively shorter appendages, and unmodified elytral apices. They are larger and more lightly striate than *chloronotus*, with sides of prothorax much less sinuate. The specimen from Neth. N. G. has fully developed folded wings and impunctate proepisterna; that from Erima, wings reduced, about $\frac{4}{5}$ as long as elytra, unfolded, and proepisterna coarsely punctate, with 20-odd punctures on left and 13 on right side. Nevertheless, these specimens are so much alike in other ways that I am reasonably sure they are one species. Kuntzen (1911) records *politus* from

New Britain ("Neupommern") and the **Admiralty Is.** as well as from New Guinea, but his identifications are perhaps doubtful.

Lesticus chloronotus Chaudoir

Chaudoir 1868, Ann. Soc. Ent. Belgique **11**, p. 156.
Sloane 1907, Deutsche Ent. Zeits. **1907**, p. 472.
Kuntzen 1914, Sitzungsberichte Gesellschaft naturforschender Freunde Berlin, pp. 45 ff.
?var. *dahli* Kuntzen 1913, Ent. Rundschau **30**, p. 12.
—— 1914, Sitzungsberichte Gesellschaft naturforschender Freunde Berlin pp. 48 ff.

Description. Lesticus chloronotus, in Australia, is a medium-sized to large, greenish black, rather shining, winged species, with unmodified elytral apices. The elytral striation varies: all the striae are at least lightly impressed in specimens from most Australian localities, but specimens from the general area of the Rocky Scrub and Coen in the middle part of the Cape York Peninsula are more lightly striate as well as somewhat larger: 7th and 8th intervals are strongly convex before apex in all specimens. The proepisterna sometimes are and sometimes are not coarsely punctate in Australian specimens; the variation is individual. Proportions: head .73, .70, .73 width prothorax; prothoracic width/length 1.38, 1.42, 1.42; base/apex 1.02, 1.01, 1.09; base/head .97, .97, .97; width elytra/prothorax 1.28, 1.24, 1.31. *Measurements:* length *c.* 20-23; width *c.* 7-8 mm. (Australian specimens); 19½ x 6.9mm. (Yule Is. example).

Types. From **Australia** without more exact locality; presumably now in the Oberthür collection, Paris Mus.

Occurrence in New Guinea. Somewhat doubtful. Kuntzen (1913) records what he calls variety *dahli* from Hatzfeldhafen, **N-E. N. G.**, as well as from **New Britain** and **Admiralty Is.**, but I am not sure that these specimens really represent *chloronotus*. The only specimen I have seen from New Guinea that seems to be this species is from "Yule Island" (south coast of **Papua**), in Hungarian National Mus. I identify it with some doubt, for 7th and 8th elytral intervals are less prominent toward apex than they should be. However, the specimen is teneral, still reddish brown in color, and the elytra may not have been fully formed and hardened when it was killed. The proepisterna are almost impunctate, with a single coarse puncture on left side only.

Measured specimens. A ♂ from Mt. Fox plateau and ♀ from near Cairns, North Queensland, Australia, and the Yule Is. (♀) specimen; proportions given in this order.

Notes. In Australia this species ranges at least from part of the Cape York Peninsula south to Port Macquarie in northern New South Wales. It is usually found under cover on the ground in more or less wet forest but not associated with open water.

Lesticus nitescens Sloane

Sloane 1907, Deutsche Ent. Zeits. **1907**, pp. 470, 472.
Kuntzen 1911, Ent. Rundschau **28**, p. 165.
—— 1914, Sitzungsberichte Gesellschaft naturforschender Freunde Berlin **1914**, pp. 48 ff.

Description. A medium-sized *Lesticus* of about average form (except humeri somewhat more narrowed than in winged species) and convexity; rather shining black, sometimes with metallic color; technical characters indicated in key (p. 523). *Proportions:* head .72 and .71 width prothorax; prothoracic width/length 1.32 and 1.26, base/apex 1.06 and 1.07, base/head 1.01 and 1.03; width elytra/prothorax 1.24 and 1.26. *Measurements:* length *c.* 18-21; width *c.* 6.5-7.7 mm.

Type. From "Simbang, New Guinea"; this is one of Biró's localities on Huon Gulf, **N-E. N. G.** A second specimen listed by Sloane was from Herbetshohe, Gazelle Peninsula, **New Britain**. The type should be in Entomological Mus., Berlin-Dahlem.

Occurrence in New Guinea. **N-E. N. G.**: 2, Wamuki, Mongi Watershed, Huon Peninsula, 800 m. (*c.* 2600 ft.), Apr. 19-20, 1955 (E. O. Wilson, M.C.Z.); 1, Bandong, Bunbok Valley north of Lae, 1300 m. (*c.* 4225 ft.), May 26, 1955 (E. O. Wilson, M.C.Z.); and Sattelberg (Kuntzen 1911). **Neth. N. G.**: 2, Wareo (in Andrewes' collection, received from Hauser); actually only one of these specimens bears the "Wareo" label, but the other specimen resembles the first one and has the same "Ex Coll. G. Hauser" label.

Measured specimens. The 2 (♂ ♀) from Wamuki.

Notes. The specimens listed above are darker (less metallic) and probably also more convex than Sloane's types, but I prefer to assign them here rather than make another new name or names in this already somewhat confused group. The specimen from Bandong has the 7th and 8th elytral intervals strongly convex toward apex; the other specimens have these intervals almost flat; and the specimens from Wareo differ slightly in form and appearance from the others. More material is needed to show whether this variation is individual or whether more than one species or subspecies is represented.

Lesticus depressus n. sp.

Description. Medium-large, relatively broad and depressed (form as figured, fig. 53); color black with strong greenish tinge above, appendages brownish black, outer segments of antennae browner; reticulate microsculpture (very fine, nearly isodiametric or slightly transverse) visible on most of upper surface but most distinct on elytra. *Head* .78 width prothorax; eyes small, genae rounded in profile, about as long as eyes and almost as prominent; antennae with middle segments about 3X long as wide; front moderately convex; clypeal suture very deep; neck impression slight; frontal sulci sublinear, deeply impressed, strongly curving outward posteriorly toward anterior part of eyes; clypeus rather deeply obtusely emarginate; labrum less deeply rounded-emarginate. *Prothorax* subcordate, very wide anteriorly; width/length 1.35; base/apex .76; base/head .84 (base measured between posterior submarginal setae); base subtruncate, rounded-oblique toward sides; apex broadly emarginate at middle, truncate or slightly retracted toward sides so that anterior angles are not at all prominent anteriorly; sides slightly arcuate for most of length, strongly converging and slightly sinuate before base; side margins moderate but disc beside them more or less depressed so that margins appear wider than usual: each margin 2-setose as usual, anterior seta about ⅔ from apex, posterior slightly before basal angle; basal angles obtuse, narrowly rounded; disc only moderately convex, with anterior and posterior transverse impressions slight; middle line fine, much abbreviated basally; basol-lateral impressions shallow, poorly limited, not punctate. *Elytra* ⅕ wider than prothorax (E/P 1.20), rather strongly narrowed anteriorly, depressed, not margined in front inside humeri; margins with subapical interruptions as usual in tribe; apices broadly rounded with sutural angles narrowly rounded; striae almost obsolete (faintly, irregularly indicated) except 8th well impressed; other striae deeper at extreme apex, and 7th and 8th intervals convex before apex but not strongly so; 3rd interval impunctate. *Inner wings* evidently reduced, but not directly examined. *Lower surface:* metepisterna (not including lobes) scarcely longer than wide; proepisterna impunctate, mesepisterna with some rather small punctures, but metepisterna and sides of abdomen impunctate; last 3 ventral segments strongly impressed across base as usual. *Legs* apparently normal. *Secondary sexual characters* (of ♀) normal: last ventral segment with two apical setae each side. *Measurements:* length 21; width 7.2 mm.

Type. Holotype ♀ (British Mus.) from Snow Mts., **Neth. N. G.**, 4000-6000 ft., Jan.-Feb. 1913 (A. F. R. Wollaston); the type is unique.

Measured specimen. The type.

Notes. Its form and color instantly distinguish this species from all others known from New Guinea.

Lesticus toxopei n. sp.

Description. Rather slender and depressed; brownish black, appendages brownish; reticulate microsculpture absent on front (but latter faintly punctulate), light and somewhat transverse on pronotum, more distinct (but fine) and isodiametric or slightly transverse on elytra. *Head* .87 width prothorax; eyes rather large (in genus), genae very short and oblique; antennae with middle segments about 2X long as wide; mandibles strongly curved but with apices very long and slender; front slightly impressed transversely between anterior parts of eyes; neck constriction almost obsolete; clypeal suture deeply impressed; clypeus bisinuate, faintly lobed at middle and slightly advanced at sides; labrum broadly emarginate; frontal sulci short, deep, linear, diverging posteriorly, ending near anterior supraocular setae; mentum with a very broad truncate tooth (or could be described as truncate with emarginations on each side). *Prothorax* narrowly subcordate; width/length 1.22; base/apex .87; base/head .79; sides not very strongly rounded for about ¾ of length, moderately sinuate before base; side margins rather narrow anteriorly, slightly broader in basal ¼, each with usual 2 setae about ⅓ from apex and near (very slightly before) basal angle; base irregularly subtruncate; apex subtruncate except slightly emarginate at middle; anterior angles not advanced; disc rather flat, with anterior and posterior impressions very weak, middle line fine and slightly abbreviated anteriorly and posteriorly; baso-lateral impressions shallow and poorly defined but extending vaguely well forward onto disc, impunctate. *Elytra* about ¼ wider than prothorax (E/P 1.27), rather strongly narrowed anteriorly (widest well behind middle), so humeri not prominent; basal margins joining and ending at bases of 3rd striae, obtusely angulate at humeri; lateral margins narrow; subapical sinuations virtually absent, and usual interruptions of margins absent; apices rather narrowly independently rounded; striae virtually entire but very lightly impressed, 7th not much deeper but 8th deep and with ocellate punctures

as usual; 7th and 8th intervals only slightly convex toward apex; 3rd interval impunctate on left elytron, 1-punctate on right, the puncture being near 3rd stria less than ¼ from base. *Inner wings* evidently vestigial but not examined. *Lower surface:* prosternal process without setae; metepisterna (not including posterior lobes) with outer edge slightly shorter than anterior edge; whole lower surface almost impunctate except for some rather light punctures on mesepisterna; last three ventral segments transversely impressed basally as usual. *Legs* without obvious special characters (as compared with other *Lesticus*). *Secondary sexual characters* (of ♀) normal; ♀ with anterior tarsi not dilated, and 2 setae each side last ventral segment. *Measurements:* length 18; width 5.8 mm.

Type. Holotype ♀ (Leiden Mus.) from Moss Forest Camp, Snow Mts., **Neth. N. G.**, 2600-2800 m. (about 8450-9100 ft.) (Toxopeus); the type is unique.

Measured specimen. The type.

Notes. This species is noteworthy for loss of subapical interruptions of the elytral margins — there is simply no trace of interruptions as the elytra are looked at from the side in normal closed position. The interruptions are supposed to be a tribal character of Pterostichini, but their loss is not really very important taxonomically in the present case, for the present species is in most ways not very different from the following one, in which the interruptions are still distinct. The interruption of the margin is connected with the internal plica of the elytron which probably has a supporting function in winged Pterostichini. Its loss in the present species may be an indirect result of atrophy of the wings and adaptation to a flightless existence.

Lesticus ambulator n. sp.

Description. Rather small and narrow (form as figured, fig. 54, but rather variable, with some sexual dimorphism — see elytra), moderately convex; black or brownish black, appendages dark reddish, outer segments of antennae browner; moderately shining, reticulate microsculpture absent on front (but latter with faint punctulation), virtually absent on pronotum (which also is faintly punctulate or with broken fragments of reticulation), light but distinct and nearly isodiametric or slightly transverse on elytra. *Head* large, .79 and .88 width prothorax; eyes smaller and flatter than in preceding species (*toxopei*), enclosed by rather long oblique genae posteriorly;

mandibles strongly curved, acutely pointed, but less drawn out at apex than in preceding species; antennae with middle segments (not including pubescence) about 2X long as wide; clypeus and labrum both broadly emarginate; front weakly and neck still more weakly transversely impressed, but clypeal suture sharply impressed; frontal foveae short, linear, well impressed, diverging posteriorly and ending before reaching anterior supraocular setae; mentum with very broad subtruncate (but variable) tooth. *Prothorax* narrowly subcordate; width/length 1.22 and 1.18; base/apex 1.00 and .93; base/head .95 and .85; sides not very strongly arcuate for about ¾ of length, then moderately sinuate to base; side margins rather narrow anteriorly, widening posteriorly beginning near anterior lateral setae; each margin with usual 2 setae about ⅓ from apex and at basal angle: base subtruncate at middle, vaguely oblique toward sides; apex subtruncate, with anterior angles not advanced except actual lateral margins slightly so; disc with usual weak transverse impressions and very fine middle line more or less abbreviated at both ends; baso-lateral impressions deeper than in preceding species but poorly limited, impunctate. *Elytra* about ⅕ to ⅖ wider than prothorax (E/P 1.22 and 1.42), widest behind middle (more narrowed at base and expanded posteriorly in ♀ than in ♂); basal margin fine and sometimes interrupted, usually ending at base 3rd stria, rounded-angulate at humeri; sides sometimes subsinuate behind humeri, with weak subapical sinuations and margins distinctly interrupted as usual in Pterostichini; apices rather narrowly independently rounded; striae almost obsolete (indicated by inequalities of the surface and sometimes some irregular punctulation); 8th and 9th only slightly impressed but indicated by rows of punctures; intervals not convex toward apex or at most very slightly so; 3rd interval 2- or 3-punctate (2 anterior punctures always present on each elytron; posterior puncture present on both sides in 1, and on 1 side in 3 individuals; 1 individual with right elytron 4-punctate). *Inner wings* vestigial, vestiges scarcely extending beyond posterior edge of metathorax. *Lower surface* virtually impunctate except sometimes with faint traces of punctures on mesepisterna; prosternal process sometimes with (usually without) single setae, declivity irregularly rounded or flattened (variable); metepisterna (not including lobes) about long as wide; last three ventral segments transversely impressed across base as usual. *Legs* not obviously different from other *Lesticus*.

Secondary sexual characters normal: ♂ with anterior tarsi moderately dilated, first 3 segments biseriately squamulose; ♂ with 1, ♀ 2 setae each side apex last ventral segment. *Measurements:* length *c.* 15-16½; width 4.8-5.7 mm.

Types. Holotype ♂ (M.C.Z. No. 30,220) and 12 paratypes all from Mt. Wilhelm, Bismarck Range, **N-E. N. G.**, 7,000-10,000 ft., Oct. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This very distinct species is, I suppose, related to the preceding one, from the Snow Mts. Other related species are to be expected on other high peaks in New Guinea. My specimens were taken under logs and other cover on the ground in wet cloud forest or moss forest.

Rhytiferonia New Genus

Diagnosis. Medium-large, rather parallel-sided but convex, flightless pterostichines, characterized (in the New Guinean fauna) as indicated in key to genera (p. 499).

Description. Head of moderate size; mandibles rather long (but not excessively so), rather weakly arcuate, pointed, without setae in scrobes; antennae not moniliform, pubescent from 4th segment; all palpi slender in both sexes; labium rather broad, 2-setose; paraglossae slender, longer than central part of labium, maxillae with inner lobe broadly but strongly arcuate, pointed at apex, inner edge closely fringed with long bristles; mentum toothed, tooth deeply emarginate at apex. *Prothorax* with baso-lateral impressions irregular (not linear), more or less continuous with depressed basal parts of lateral margins. *Elytra* with subapical sinuations and strong interruptions of margin; basal margin entire, joining sutural striae at base; basal punctures absent; scutellar strioles absent; 9th stria and 10th interval present in about posterior ½ of elytral length; 3rd interval impunctate. *Lower surface:* prosternum with process not margined, without setae, posterior declivity rather broad, flat; proepisterna longitudinally rugulose on inner ½; metepisterna (not including posterior lobes) short, not much longer than wide; last 3 ventral segments strongly transversely impressed at base. *Inner wings* evidently vestigial, elytra (lightly) connate. *Legs:* tarsi rather short (but not extremely so), upper side at most faintly sulcate on outer side only; 5th tarsal segments with accessory setae. *Secondary sexual characters* normal: ♂ front

tarsi widely dilated, dilated segments not oblique, first 3 biseriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment.

Genotype. Rhytiferonia nigra (below).

Generic distribution. Known only from high altitudes on the Snow Mts., **Neth. N. G.**: apparently *not* represented on the Bismarck Range in N-E. N. G.

Notes. So far as I can determine, this new genus has no close relatives anywhere on the Malay Archipelago. At first sight it resembles nothing in Australia either. It is vaguely similar to some species of *Sarticus*, but there is obviously no real relationship. But the rugulose proepisterna suggest an affinity with *Rhytisternus*, and this is at least consistent with the bifid mentum tooth, absence of scutellar strioles, and absence of punctures on 3rd elytral intervals. However, the new genus differs from *Rhytisternus* not only in shorter metepisterna (this is a secondary adaptive character, following atrophy of inner wings) but also in lacking punctures at bases of 2nd elytral striae, in having partial but well developed 10th elytral intervals, and especially in having transversely impressed ventral segments. My guess is (and it is only a guess) that the new genus is derived from an originally Australian stock related to *Rhytisternus*. If so, it is thoroughly differentiated.

The species of this new genus superficially resemble *Haploferonia* (p. 547), but the technical characters (within the Pterostichini) are very different. The 2 genera presumably represent parallel or convergent modifications of two different stocks.

Key to Species of Rhytiferonia

1. Prothorax subquadrate, with comparatively weakly rounded sides; genae not or not much more prominent than eyes (p. 534) *nigra*
— Prothorax more broadly rounded at sides; genae more prominent than eyes (p. 536) *iebele*

Rhytiferonia nigra n. sp.

Description. Form (fig. 55) as described under genus; black, rather dull, appendages piceous or reddish piceous with outer segments of antennae browner; reticulate microsculpture of small meshes, isodiametric on head and elytra, slightly transverse on pronotum. *Head* .73 and .76 width prothorax; eyes rather small, enclosed behind by genae, which are about as long and as prominent as eyes, but somewhat variable; antennae rather stout,

middle segments about 2X or slightly less long as wide; front moderately convex; frontal foveae rather short, irregular, weakly impressed; clypeal suture indicated (variably); neck impression slight or absent; 2 supraocular setae each side. *Prothorax* subquadrate; width/length 1.16 and 1.19; base/apex *c.* 1.04 and 1.04; base/head *c.* 1.06 and 1.01; sides slightly and sometimes irregularly arcuate through whole length; base subtruncate or slightly emarginate at middle, slightly oblique at sides, not margined; apex subtruncate or broadly emarginate, with anterior angles slightly advanced; apex not margined except near angles; side margins narrow in anterior ½, widening posteriorly and joining baso-lateral impressions in an (irregular) impression; each margin with usual 2 setae about ⅓ from apex (a little inside marginal channel) and before (and a little inside of) basal angle; basal angles moderately rounded; disc rather strongly convex; transverse impressions weak; middle line fine, abbreviated at both ends; baso-lateral impressions as described under genus, impunctate. *Elytra* about ⅕ wider than prothorax (E/P 1.19 and 1.23), widest a little behind middle, with sides slightly arcuate except just behind humeri; basal margin angulate (almost right) and usually finely dentate at humeri; striae entire, well impressed, not distinctly punctate; intervals moderately convex. *Inner wings* vestigial. *Lower surface* as described under genus; proepisterna longitudinally strigulose (as described) but body below virtually impunctate. *Legs* rather stout; posterior trochanters bluntly pointed in both sexes; tarsi as described under genus. *Secondary sexual characters* as described under genus. Male copulatory organs as figured (fig. 63). *Measurements:* length 18½-21; width 6.0-6.7 mm.

Types. Holotype ♂ (Leiden Mus.) from Lake Habbema, Snow Mts., **Neth. N. G.**, 3300 m. (*c.* 10,725 ft.), Oct. 2, 1938 (Toxopeus); and 1 ♀ paratype (M.C.Z. No. 30,221) with same data as holotype except altitude given as 3250-3300 m. (*c.* 10,575-10,725 ft.) and date as "Ult. VII-ult. VIII."

Additional material. The following 4 specimens from the Snow Mts. are assigned to the present species but not as types; they vary individually and possibly (in a minor way) geographically: 2 ♂ ♂, Moss Forest Camp, 2600-2800 m. (*c.* 8450-9100 ft.), Oct. 9- Nov. 5; 1 ♂, Scree Valley Camp, 3800 m. (*c.* 12,350 ft.), Sept.; 1, Valley N. E. of Mt. Wilhelmina, 3600 m. (*c.* 11,700 ft.), Sept.; all collected in 1938 by L. J. Toxopeus.

Measured specimens. The (♂ ♀) types.

Notes. Although the habitat of this species is not given, it

evidently lives on the ground, and the localities suggest that it occurs both in moss forest and in open country above timber line.

Rhytiferonia iebele n. sp.

Description. Answers the description of the preceding species except in the following details: genae more prominent (more prominent than eyes); prothorax relatively larger, with slightly wider base and more rounded at sides, with basal angles more broadly rounded. Proportions: head .67 and .69 width prothorax; prothoracic width/length 1.20 and 1.18, base/apex 1.10 and 1.11, base/head 1.14 and 1.12; width elytra/prothorax 1.16 and 1.12. *Measurements:* length *c.* 17½-20½; width 5.6-6.3 mm.

Types. Holotype ♀ (Leiden Mus.) and 1 ♀ paratype (M.C.Z., No. 30,222) from Iebele Camp, Snow Mts., **Neth. N. G.**, 2250 m. (*c.* 7325 ft.), Nov.-Dec. 1938 (Toxopeus); 1 ♀ paratype from Iebele River, 2200 m. (*c.* 7175 ft.), Oct. 28, other data as type.

Measured specimens. The holotype and Iebele River paratype.

Notes. The present form is clearly distinguishable from the preceding one, but more material is needed to show whether it should be considered a separate species or a geographical subspecies. *Iebele* occurs at a slightly lower altitude than *nigra*.

Genus Prosopogmus Chaudoir

Chaudoir 1865, Bull. Soc. Nat. Moscou **38**, Part 2, No. 3, p. 92.
Tschitschérine 1890, Horae Soc. Ent. Rossicae **25**, p. 163.
Sloane 1894, Proc. Linn. Soc. New South Wales **29**, p. 428.
—— 1920, Proc. Linn. Soc. New South Wales **45**, pp. 152, 159.
Csiki 1930, Coleop. Cat., Carabidae, Harpalinae **4**, p. 564 (see for synonyms etc.).

Diagnosis. This is, in New Guinea, the only genus of medium-small pterostichines (under 10 mm.) with the last three ventral segments conspicuously transversely impressed basally. Some other characters are indicated in the key (p. 499).

Description. None needed here.

Genotype. Feronia impressifrons Chaudoir of New Zealand.

Generic distribution. Australia, New Zealand, New Guinea, the Moluccas, Fiji (see notes, below).

Notes. I am not sure that the geographically isolated species on New Zealand and Fiji are really congeneric with those from Australia and New Guinea, but I cannot undertake to investigate this now. Different Australian species of the group occur on the

ground under cover in a variety of country including rain forest, open eucalyptus woodland, and grassland.

Prosopogmus garivagliae Straneo

Straneo 1938, Mem. Soc. Ent. Italiana **16**, p. 229.

Description. A black or brassy, ordinary looking carabid with full inner wings, deeply striate elytra, and characters indicated in the key to genera (p. 499). Proportions: head .69 and .68 width prothorax; prothoracic width/length 1.33 and 1.33, base/apex 1.43 and 1.38, base/head 1.30 and 1.33; width elytra/prothorax 1.34 and 1.32. *Measurements:* length *c.* 7.3-9.7; width 2.7-3.3 mm.

Type. A ♀ from **New Guinea** without further locality, in Straneo collection. An additional specimen differing slightly from the type is mentioned by Straneo from Sattelberg, (**N-E. N. G.**), in the Andrewes collection now in British Mus., where I have seen it.

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.-July 1944 (Darlington); 2, Owen Stanley Range, Goilala: Bome, 1950 m. (*c.* 6350 ft.), Mar. 8-15, 1957 (W. W. Brandt, Bishop Mus.); 1, same data except Goilala: Tororo, 1560 m. (*c.* 5070 ft.), Feb. 15-20. **N-E. N. G.**: 1, Bulolo, 880 m. (*c.* 2860 ft.), Aug. 23, 1956 (E. J. Ford, Jr., Bishop Mus.), taken in light trap; 1, Finisterre Range, Saidor: Matoko Village, Sept. 6-24, 1958 (W. W. Brandt, Bishop Mus.); 2, Sattelberg, Huon Gulf, 1899 (Biró, Hungarian National Mus.); and 4 labeled simply "N. Guinea, Biró 1899" without further locality; 1, Aitape, Aug. 1944 (Darlington); 59, Chimbu Valley, Bismarck Range, 5000-7500 ft., Oct. 1944 (Darlington). **Neth. N. G.**: 2, Bernhard Camp, 50 m. (*c.* 150 ft.) Aug.-Sept. 1938 (J. Olthof, Leiden Mus.); 2, Baliem Camp, Snow Mts., 1700 m. (*c.* 5525 ft.), Dec. 1938 (Toxopeus). The records suggest that this species occurs throughout New Guinea mostly on the lower and middle mountain slopes, although it occurred virtually at sea level at Dobodura and Aitape.

Measured specimens. A pair (♂ ♀) from Chimbu Valley.

Notes. Variation occurs in this species in depth of elytral striae and convexity of intervals. The variation tends to be altitudinal. Specimens from very low altitudes (those from Dobodura, Aitape, and Bernhard Camp) have elytral striae deeply impressed and discal intervals of elytra only slightly unequal and all rather strongly convex. Specimens from higher

altitudes, including those from Chimbu Valley, Baliem Camp, and Sattelberg, have discal intervals 2, 3, and 4 slightly wider and flatter than the others. However, there is individual as well as altitudinal variation in this character, and it seems unwise to make it the basis of a formal subspecies now. This species is very similar to *P. batjanicus* Straneo (1955, *Atti Soc. Italiana Sci. Nat.* **94**, p. 145) of the Moluccas, and it is also (less) similar to *P. oodiformis* Macleay and *P. delicatulus* Tschitscherine of eastern Australia. The specimens of it that I collected were taken either among dead leaves on the ground in rain forest, or under various cover in the more open, grassy part of the Chimbu Valley. Many of the Chimbu Valley specimens were taken under decumbent strawberry plants in a missionary's garden.

Paraloma New Genus

Diagnosis. Medium-sized, rather stout and depressed, flightless pterostichines, characterized (in the New Guinean fauna) as indicated in the key on page 499.

Description. Head large; mandibles without setae in scrobes, strongly curved, tips long and acute; antennae rather short but not moniliform, pubescent from 4th segment; all palpi slender in both sexes; labium broad, 2-setose; paraglossae slender, not much longer than middle part of labium; inner lobe of maxillae very strongly curved, long-produced, and acute at apex, inner edge with rather sparse, curved bristles; mentum with short, very broad, subtruncate or broadly emarginate tooth. *Prothorax* with baso-lateral impressions moderate, not linear, not separated from depressed part of margins. *Elytra* usually with slight subapical sinuations, with or without interruptions of margin (individual variation!); basal margin entire or obsolete, joining sutural striae at base when entire; basal puncture at base sutural stria (*fortis*) or absent (*gracilis*); scutellar striae present; 9th striae and 10th interval present in about posterior ½ of elytral length; 3rd interval impunctate. *Lower surface:* prosternal process not margined, without setae, posterior declivity rounded; proepisterna more or less wrinkled, but irregularly (not longitudinally) so; metepisterna short; ventral segments not transversely impressed. *Legs:* tarsi at most lightly or indistinctly grooved externally, 5th segments with accessory setae. *Secondary sexual characters* normal: male front tarsi with first 3 segments scarcely or distinctly dilated (not oblique), segments

2 and 3 (and sometimes 1) biseriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment.

Genotype. Paraloma fortis (below).

Generic distribution. Known only from high altitudes on the Snow Mts., Neth. N. G.; apparently *not* represented on the Bismarck Range in N-E. N. G.

Notes. I do not know the relationships of this genus. In appearance, *Paraloma fortis* is much like *Nesites* (*Aloma*) *mirum* figured by Andrewes (1931, *J. Federated Malay States Mus.* **16**, p. 449, Fig. 7), but *Paraloma* differs from *Nesites* in having scutellar strioles, ventral segments not transversely sulcate (this is supposedly a very important character), ♀ with 2 setae each side last ventral segment (only 1 in *Nesites*), etc. If *Paraloma* is derived from the same stock as *Nesites*, the divergence is considerable. Perhaps other genera will be found on other high mountains in the Malay Archipelago to suggest the phylogeny of the group.

Key to Species of Paraloma

1. Eyes small, about long as genae; elytra with well defined basal margin (p. 539) ..... *fortis*
— Eyes larger, much longer than genae; elytra with basal margin obsolete (p. 540) ..... *gracilis*

Paraloma fortis n. sp.

Description. Form (fig. 56) dimorphic (see prothorax), sometimes almost as in *Nesites* (*Aloma*) *mirum* Andrewes; piceous or reddish piceous, appendages reddish; reticulate microsculpture almost obsolete on head (traces apparently isodiametric), partly obsolete or irregular and slightly transverse on pronotum, more distinct and slightly transverse on elytra. *Head* .84, .81, .84 width prothorax; eyes rather small, genae *c.* long as eyes but oblique, not prominent; antennae stout, middle segments 2X or slightly less long as wide; front rather strongly convex; frontal impressions almost obsolete; clypeal suture fine; neck constriction virtually absent; 2 supraocular setae each side; surface of front finely punctulate. *Prothorax* subcordate, dimorphic (anterior angles sometimes very prominent, sometimes not); width/length 1.20, 1.19, 1.23; base/apex .85, .92, .88; base/head .93, .92, .96; sides irregularly and weakly arcuate for ¾ or more of length, broadly but not strongly sinuate before basal angles; base subtruncate (sometimes irregularly so), not margined; apex

broadly and slightly emarginate at middle, vaguely lobed toward sides, not margined; anterior angles variable, sometimes strongly produced and pointed, sometimes only slightly advanced and blunt (dimorphism is individual, not sexual: both sexes are dimorphic); side margins rather narrow anteriorly, broader in posterior ⅓; basal angles slightly variable, right or slightly blunted; each margin with usual 2 setae about ⅓ from apex and *before* basal angle; disc with usual rather weak transverse impressions; middle line fine, more or less abbreviated at both ends; baso-lateral impressions as described under genus, not or vaguely punctate, and area between them not or vaguely punctate; disc with transverse wrinkles especially across middle, and surface more or less punctulate. *Elytra* wider than prothorax (E/P 1.27, 1.29, 1.37), short, widest behind middle, narrowed anteriorly; basal margins entire, angulate (obtuse, not quite right) at humeri; subapical marginal interruption present or absent; apices conjointly rounded or nearly so; striae entire or nearly so (sometimes almost obsolete at apex), irregularly punctulate. *Inner wings* vestigial. *Lower surface* as described under genus: sides of body below slightly wrinkled but not distinctly punctate. *Legs* as described under genus. *Secondary* sexual characters as described under genus; ♂ tarsi scarcely dilated. Male copulatory organs: figure 64. *Measurements:* length 11.7-14.0; width 4.3-5.1 mm.

Types. Holotype ♂ (Leiden Mus.) with prominent anterior prothoracic angles, and 3 paratypes (2 in M.C.Z., No. 30,223) from Camp E. of Mt. Wilhelmina, Snow Mts., **Neth. N. G.**, 3600 m. (*c.* 11,700 ft.), Sept. 1938 (Toxopeus); and 1 paratype from Scree Valley Camp, also Snow Mts., 3850 m. (*c.* 12,500 ft.), 1938 (Toxopeus).

Measured specimens. The holotype (wide ♂) and 2 paratypes (narrow ♂, wide ♀) from Camp E. of Mt. Wilhelmina; sexes of all specimens determined by dissection.

Notes. There is no record of the habitat of this species, but it evidently lives on the ground above timber line.

Paraloma gracilis n. sp.

Description. Answers description of preceding species except in following details: form more slender and graceful; eyes larger and more prominent, genae short, forming strong (but obtuse) angles with neck; anterior angles of prothorax moderately prominent (less so than in "wide" *fortis*), basal angles of prothorax

more rounded but not strongly so; basal margin of elytra obsolete; marginal interruption of elytra almost obsolete; ♂ tarsi more widely dilated than in *fortis*. Proportions: head .86 width prothorax; prothoracic width/length 1.24, base/apex .88, base/head .85; width elytra/prothorax 1.21. *Measurements:* length *c.* 14; width *c.* 4.6 mm.

Type. Holotype ♂ (Leiden Mus.) from Seree Valley Camp, Snow Mts., **Neth. N. G.**, 3800 m. (*c.* 12,350 ft.), Sept. 20, 1938 (Toxopeus); the type is unique.

Measured specimen. The type.

Notes. This is obviously a different species from *fortis*, although it occurs with the latter. The single specimen is somewhat warped so that exact measurement is impossible.

Genus PLATYCOELUS Blanchard

Blanchard 1853, Voyage au Pole Sud . . . L'Astrolabe et La Zélée, Zool. **4**, p. 25, pl. (Zool.) 2, fig. 10.

Chaudoir 1871, Bull. Soc. Nat. Moscou **44**, Part 2, No. 3–4, p. 286.

Chlaenioidius Chaudoir 1865, Bull. Soc. Nat. Moscou **38**, Part 2, No. 3, p. 110 (new synonym).

Tschitschérine 1890, Horae Soc. Ent. Rossicae **25**, p. 164.

Sloane 1920, Proc. Linn. Soc. New South Wales **45**, p. 152.

Hypherpinus Straneo 1938, Mem. Soc. Ent. Italiana **16**, p. 227 (new synonym).

Dalbertisia Straneo 1939, Mem. Soc. Ent. Italiana **18**, p. 117 (new synonym).

Diagnosis. Small or medium-sized (9.7-18.0 mm.); black, shining, sometimes with elytra irideseent; usually (but not always) fully winged; ventral segments not transversely impressed; elytra with scutellar strioles present, 3rd interval not punctate; mentum tooth emarginate; and ♂ parameres long and slender (exceptional among Pterostichini).

Description. None required here; see diagnosis, above.

Genotypes. Of *Platycoelus, P. depressus* Blanchard of New Guinea (see below); of *Chlaenioidius, Feronia prolixa* Erickson of Australia (present designation); of *Hypherpinus, H. jedlickai* Straneo of the Molueeas; of *Dalbertisia, D. lucidula* Straneo (= *P. depressus*) of New Guinea.

Generic distribution. Australia, New Guinea, New Britain, Moluceas, New Caledonia; and *Psegmatopterus* Chaudoir of New Zealand is apparently closely related (Britton 1940, *Trans. R. Soc. New Zealand* **69**, p. 507).

Notes. Chaudoir made no comparison between *Chlaenioidius* and *Platycoelus*. Most of the New Guinean speeies ("*Platycoelus*") have a somewhat different aspect from most of the

Australian species (*"Chlaenioidius"*), but *archboldi* of New Guinea resembles Australian species, and a probably undescribed species of the New Guinean group of the genus occurs in tropical North Queensland, Australia. I can find no real generic distinction between the two groups.

Straneo distinguished *Hypherpinus* from *Chlaenioidius* by lack of basal margin of elytra in the former, but this character proves not to be of generic value. This fact is demonstrated by *Chlaenioidius* (= *Platycoelus*) *archboldi*, described below, in which the basal elytral margin varies *individually* from nearly entire (but lightly impressed) to even more obliterated than in the type of *Hypherpinus*, with which I compared specimens at the British Museum in 1947.

Straneo described *Dalbertisia* without referring to either *Platycoelus* or *Chlaenioidius*, stressing the unusual form of the ♂ parameres. They are indeed unusual, but the Australian *Chlaenioidius* has parameres of the same general nature although different in detail (*cf.* figs. 65, 66). There is no generic distinction here, so far as I can judge.

In habits, most Australian and New Guinean species of this genus occur under cover on the ground in wet places, often (but perhaps not always) beside swamps or standing water. However, I suspect that *P. depressus*, of which some individuals have atrophied wings, may inhabit leaf-litter on the ground in rain forest.

Key to Species of Platycoelus of New Guinea

1. Smaller and more compact; marginal intervals of elytra not closely punctulate; wings sometimes (not always) reduced 2
— Larger and more elongate; marginal intervals (nos. 8, 9, and marginal gutters) of elytra closely punctate; wings always fully developed ..3
2. Elytra fully striate or nearly so (p. 543) . . . . . *depressus*
— Discal elytral striae obliterated except at extreme apex (p. 544) *biroi*
3. Head closely punctulate between posterior edges of eyes; prothorax more narrowed anteriorly and less so posteriorly (base/apex 1.33 and 1.35); basal margin of elytra lightly impressed, sometimes interrupted or obsolete (p. 545) . . . . . *archboldi*
— Head not closely punctulate; prothorax relatively less narrowed anteriorly and more so posteriorly (base/apex 1.22 and 1.19); basal margin of elytra entire, joining bases of scutellar striae (p. 547) . . . . . *major*

Platycoelus depressus Blanchard

Blanchard 1853, Voyage au Pole Sud . . . L'Astrolabe et La Zélée, Zool. **4**, p. 25, pl. (Zool.) 2, fig. 10.

Louwerens 1956, Treubia **23**, p. 221.

Dalbertisia lucidula Straneo 1939, Mem. Soc. Ent. Italiana **18**, p. 117, figs. 1–6. (new synonym).

—— 1942, Boll. Soc. Ent. Italiana **74**, p. 13.

Description. Relatively small, broad, and compact; dark, not or not strongly irideseent; prothorax transversely subquadrate, sides broadly rounded, not or at most very slightly sinuate before base; elytra with basal margin entire, striae rather lightly impressed, punctulate; inner wings dimorphic, fully developed or reduced. Proportions: head .62 and .57 width prothorax; prothoracic width/length 1.29 and 1.35, base/apex 1.26 and 1.24, base/head 1.28 and 1.36; width elytra/prothorax 1.27 and 1.26. Male copulatory organs: figure 65. *Measurements:* length 9.7-11.5; width 3.9-4.3 mm.

Types. Of *P. depressus*, from Triton Bay, S. coast of **Neth. N. G.**, at least 3 specimens now in Paris Mus.; of *D. lucidula*, from Fly R. (presumably **Papua**), in Genoa Civic Mus.

Occurrence in New Guinea. **Papua**: the holotype and additional specimens of *lucidula* recorded from the type locality by Straneo. **N-E. N. G.**: 1, Madang (Friedrich-Wilh.-hafen) 1901 (Biró, Hungarian National Mus.); 1, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 3, Triton Bay, 1841 (Jacquinot, Hombron, and Le Guillou, Paris Mus.).

Measured specimens. A ♂, Triton Bay, and a ♂, Aitape.

Notes. The original figure of *depressus* is hardly recognizable, but the Triton Bay specimens, sent me from the Paris Mus., are presumably types of the species. They agree very well in form etc. with Straneo's figure of *Dalbertisia lucidula*. The wings are evidently reduced in Straneo's types of *lucidula*, for he gives "Alae rudimentales" as a generic character of *Dalbertisia*. They are reduced also, to about ⅔ elytral length, in at least one of the Triton Bay specimens. I have not tried to examine the wings of the other 2 Triton Bay individuals, which are old and in poor condition and might not stand relaxing. However, my Aitape individual has the inner wings fully developed and so does Biró's from Madang. Louwerens records the species from Obi Is., **Moluccas**.

I have already stated, under the genus, that I think this species probably lives among dead leaves on the ground in rain forest. My Aitape specimen was taken in a flood in rain forest country. And the beginning of wing atrophy in the species suggests that it has moved away from the association with open water characteristic of other species of the genus.

Platycoelus biroi n. sp.

Description. Rather small and compact (in genus); black, appendages a little browner; surface shining, silky or slightly iridescent; reticulate microsculpture not distinct on head and pronotum, present as fine transverse lines on elytra. *Head* .66 width prothorax; eyes less prominent than in *depressus* and more nearly enclosed by genae posteriorly; antennae rather short, middle segments less than 2X long as wide; mandibles strongly curved, acutely pointed; clypeus truncate; labrum broadly emarginate, 6-setose; front evenly convex except slightly impressed transversely between eyes, with frontal foveae only slightly and irregularly impressed; clypeal suture fine; neck constriction slight; surface of front very smooth and shining, at most faintly and sparsely punctulate; mentum with broad truncate-emarginate tooth. *Prothorax* subquadrate, a little more narrowed in front than behind; width/length 1.30; base/apex 1.19; base/head 1.16; sides broadly arcuate through most of length, not distinctly sinuate before base; base slightly, broadly emarginate at middle, and slightly rounded-oblique at sides; apex subtruncate (or very broadly emarginate, depending on angle of view) with anterior angles not advanced; base and apex not margined (except apex toward sides); side margins narrow anteriorly, becoming broader posteriorly, each with usual 2 setae about ⅓ from apex and at (just inside of) basal angle; latter blunted-obtuse; disc moderately convex with anterior and posterior transverse impressions slight, middle line fine and abbreviated both ends; baso-lateral foveae slightly impressed, vaguely linear, about midway between middle and margins of prothorax, separated from margins by slightly convex areas; surface of disc very smooth, with at most faint and sparse punctulation. *Elytra* more than ¼ wider than prothorax (E/P 1.28); greatest width behind middle; humeri moderately prominent and rather narrowly rounded, with sides behind them vaguely sinuate; basal margin entire and well impressed, rather strongly but obtusely angulate at humeri; subapical sinuations and marginal interruptions strongly developed; apices slightly damaged

but apparently conjointly rounded; striae obsolete on disc (indicated only by slight irregularities of surface), but all striae deep at extreme apex, with 7th extending forward (lightly impressed) to about middle of elytral length, and 8th entire, irregularly but rather deeply impressed, with usual foveae and some additional punctation, and 9th (marginal gutter) punctate; surface of disc very smooth. *Lower surface* virtually impunctate; prosternal process margined; metepisterna moderately long; ventral segments not transversely impressed. *Legs* without obvious noteworthy characters. *Inner wings* evidently reduced, but not examined. *Secondary sexual characters:* of ♀ normal; ♂ unknown. *Measurements:* length 12.0; width 4.5 mm.

Type. Holotype ♀ (Hungarian National Mus.) from Simbang, Huon Gulf, **N-E. N. G.**, 1898 (Biró).

Occurrence in New Guinea. Known only from the type.

Measured specimen. The type.

Notes. At first glance this new species has the appearance of a very small "apterous" *Lesticus*, but it seems to have the characters of *Platycoelus*, although I have of course not been able to compare the ♂ parameres. The species may be allied to *P. depressus*, which it somewhat resembles in form and with which it agrees closely in form of basal impressions of prothorax.

Platycoelus archboldi n. sp.

Description. A medium-large, slightly subfusiform member of the present genus; black, shining, more or less iridescent, outer segments of antennae etc. browner; reticulate microsculpture not visible on head and disc of pronotum, faint and transverse on elytra. *Head* .67 and .67 width prothorax; eyes moderately large and prominent, genae short and oblique; antennae rather slender, middle segments about 4X long as wide; mandibles arcuate and pointed as usual; clypeus and labrum broadly emarginate; front slightly, transversely impressed between posterior edges of eyes; clypeal suture almost obsolete; frontal sulci sublinear (but not sharply defined), extending onto clypeus anteriorly and almost to mid-eye level posteriorly; surface finely but densely punctulate posteriorly (between posterior parts of eyes) and outside frontal foveae, sparsely punctulate elsewhere; mentum tooth stout, emarginate. *Prothorax* subquadrate except rather strongly narrowed anteriorly, only slightly so posteriorly; width/length 1.16 and 1.11; base/apex 1.33 and 1.35; base/head 1.25 and 1.35; sides broadly arcuate through most of length, not

or faintly sinuate before base; base subtruncate, slightly sinuate and then oblique toward sides; apex very broadly emarginate but anterior angles not otherwise advanced; base not margined; apex finely margined but margin interrupted at middle; side margins moderate and uniform through *c.* 3/4 of length, much broader basally, each with usual 2 setae slightly before middle and at (slightly inside of) basal angle; basal angles blunted-obtuse; disc with transverse impressions vague, middle line well impressed but slightly abbreviated at ends; baso-lateral impressions not deeply impressed, sublinear, about midway between middle and sides of pronotum, separated from margins by slightly convex spaces, rather closely but finely and irregularly punctulate; surface of disc otherwise almost impunctate or finely punctulate, sometimes with small areas of closer punctation anteriorly each side of middle. *Elytra* about 1/3 wider than prothorax (E/P 1.30 and 1.37), subparallel at middle; anterior margins lightly impressed, sometimes interrupted or obsolete, strongly but obtusely angulate at humeri; subapical sinuations and interruptions strongly developed; apices rather narrowly conjointly rounded; striae entire, rather lightly impressed, faintly punctulate; intervals almost flat on disc, more convex at extreme apex, not punctate on disc but 8th and 9th and marginal gutter closely punctulate for whole length and all intervals closely punctulate at apex. *Inner wings* fully developed. *Lower surface:* sides of body closely punctate or punctulate; prosternal process not margined; metepisterna moderately long; ventral segments not transversely impressed. *Legs* without obvious unusual characters. *Secondary sexual characters:* ♂ with anterior tarsi slightly dilated, first 3 segments biseriately squamulose; ♂ with 1, ♀ 2 apical setae each side last ventral segment. *Measurements:* length *c.* 15-18; width 5.6-6.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,224) and 3 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington). Additional paratypes: 1, Maffin Bay, **Neth. N. G.**, Aug. 1944 (Darlington); 2, Lake Daviumbu, Fly R., **Papua**, Aug. 19-30 and Sept. 1-10, 1936 (Archbold Expedition, A.M.N.H.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Hollandia.

Notes. I have 2 teneral specimens apparently referable to this species from Cape Gloucester, **New Britain**. The species somewhat resembles *Chlaenioidius* (= *Platycoelus*) *prolixus* (Erickson) of Australia (the genotype) but has the head and elytra less extensively punctulate and differs slightly in other ways.

Platycoelus major (Straneo)

Straneo 1942, Bull. Soc. Ent. Italiana **74**, p. 12 (*Dalbertisia*).

Description. Form as figured (fig. 57); rather large; black, elytra with little or no iridescence, appendages dark; prothorax subquadrate, more narrowed in front than behind, with sides not or slightly sinuate before base; elytra with basal margin entire, striae well impressed and distinctly punctulate, and intervals sometimes (not always) finely and sparsely punctulate. Proportions: head .66 and .67 width prothorax; prothoracic width/length 1.20 and 1.16 (1.21); base/apex 1.22 and 1.19 (1.11); base/head 1.24 and 1.22; width elytra/prothorax 1.17 and 1.25 (1.25). *Measurements:* length *c.* 13-16; width 4.2-5.5 mm.

Type. A ♂ from **New Guinea** without more exact locality, in Straneo collection.

Occurrence in New Guinea. **Papua**: 36, Dobodura, Mar.-July 1944 (Darlington); 8, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 1, Port Moresby area, May 1947 (L. Jones "C. 378," British Mus.); 3, Sagarai (River), Oct. 17, 1917 (J. T. Zimmer, Chicago Mus.).

Measured specimens. A pair (♂ ♀) from Dobodura; the proportions of the type are in parentheses, from measurements given by Straneo, but they should be compared with caution, for Straneo's method of measurement may be different from mine.

Notes. Found among dead leaves etc. in wet places.

Haploferonia new genus

Diagnosis. A medium-sized, flightless pterostichine, resembling a rather slender parallel-sided *Pterostichus* but with most of the technical characters of *Loxandrus*.

Description. Head of moderate size; mandibles of about average length and curvature; antennae pubescent from 4th segments; all palpi (of ♀) slender; labium with middle part broad, rounded, 2-setose, and paraglossae narrow, longer; inner lobes of maxillae strongly curved and produced at apex, with coarse curved setae along inner edge; mentum tooth entire. *Prothorax* with baso-lateral impressions linear. *Elytra* without subapical sinuations or marginal interruptions; basal margin entire, joining sutural stria at base; basal puncture at base 2nd stria; scutellar strioles absent or nearly so; 10th interval distinct in more than posterior ½ of elytral length; 3rd interval with 1

dorsal puncture, by 2nd stria slightly before middle of elytral length. *Inner wings* vestigial. *Lower surface:* prosternum not distinctly margined (but vaguely so), without setae; metepisterna with outer edge (not including posterior lobe) about as long as anterior edge; ventral segments not transversely impressed anteriorly, but with triangular impressions each side. *Legs:* middle and hind tarsi with first 3 segments lightly grooved externally, scarcely so internally; 5th tarsal segments with weak accessory setae. *Secondary sexual characters* of ♀ normal; ♂ unknown.

Genotype. Haploferonia simplex (described below).

Generic distribution. Known only from the type locality.

Notes. As indicated above, this genus has many characters of *Loxandrus* including simple mentum tooth, linear baso-lateral impressions of pronotum, obliteration of marginal interruption of the elytra (almost obliterated in some *Loxandrus*), absence of scutellar strioles, 1-punctate 3rd elytral interval, vaguely margined prosternal process, and absence of transverse impressions of ventral segments. Secondary sexual characters cannot be compared in the absence of the ♂ of *Haploferonia.* The new genus is distinguished from *Loxandrus* by presence of a distinct, convex (but incomplete) 10th elytral interval, and it is distinguished also from most *Loxandrus* by very short metepisterna and comparatively simple tarsal segments (not strongly sulcate above). However, the tarsal segments are relatively simple in *Loxandrus latus* of New Guinea. In fact *L. latus* and several Australian species assigned to *Loxandrus* seem to have begun a course of evolution that might lead to something like *Haploferonia.* That is, their wings and eyes are reduced, and some at least of them have entered the habitat where I suppose *Haploferonia* occurs: leaf-litter on the ground in rain forest. The phylogeny of the *Loxandrus-Nebrioferonia-Haploferonia* complex in Australia and New Guinea should be an interesting evolutionary problem.

Haploferonia simplex n. sp.

Description. Form (fig. 58) as described under genus; black, rather shining, elytra at most faintly iridescent, appendages reddish piceous; reticulate microsculpture fine and almost isodiametric on head, faint and transverse on pronotum, more distinct and transverse on elytra. *Head* .73 width prothorax; eyes not large, scarcely more prominent than genae, latter slightly

rounded-oblique and nearly long as eyes; antennae of moderate length, middle segments less than 3X long as wide; front slightly almost evenly convex except for frontal impressions; latter rather short, shallow, poorly defined, subparallel; clypeal suture fine; neck depression slight; 2 supraocular setae each side. *Prothorax* rather long, subquadrate; width/length 1.09; base/apex 1.09; base/head 1.09; sides slightly and almost evenly arcuate for whole length; base broadly emarginate at middle, rounded oblique at sides, margined only at sides; apex subtruncate or very broadly emarginate with anterior angles scarcely advanced, apex margined only at sides; side margins narrow, slightly broader posteriorly, each with usual 2 setae about ⅓ from apex and on (position of) basal angle; basal angles rather narrowly rounded; disc rather convex; transverse impressions weak; middle line fine, virtually obliterated at both ends; baso-lateral impressions linear but not much impressed, mid-way between middle line and margins, ⅓ or more length pronotum, vaguely punctate; disc otherwise virtually impunctate. *Elytra* about ⅕ wider than prothorax (E/P 1.21) sides subparallel except slightly arcuate; basal margin angulate at humeri; subapical sinuations and marginal interruptions virtually absent; striae entire, deeply impressed, not or faintly punctulate; intervals convex on disc, more so apically and laterally. *Lower surface:* sides of body punctate, proepisterna least so. *Inner wings* evidently vestigial, but not examined in the single specimen. *Legs* of about average length for group; tarsi as described in generic description. *Secondary sexual characters* (♀) normal. *Measurements:* length 12.8; width 4.0 mm.

Type. Holotype ♀ (Leiden Mus.) from mountain slope above Bernhard Camp, **Neth. N. G.**, 750 m. (*c.* 2450 ft.), Mar. 1939 (Toxopeus).

Measured specimen. The type.

Notes. The habitat of this species is not recorded, but I think it probably lives on the ground in middle-altitude rain forest.

Genus Loxandrus Leconte

Leconte 1852, J. Acad. Nat. Sci. Philadelphia (2) **2**, p. 250.

Sloane 1903, Proc. Linn. Soc. New South Wales **28**, p. 625 (key to Australian species).

—— 1920, Proc. Linn. Soc. New South Wales **45**, p. 152.

Csiki 1930, Coleop. Cat., Carabidae, Harpalinae **4**, p. 569 (see for additional references and synonymy).

Diagnosis. Small or medium-sized (6.4-11.0 mm. in New Guinea) Pterostichini; color usually dark and strongly iridescent; mentum tooth entire (not emarginate as in *Platycoelus*); pronotum with anterior margin entire or nearly so, posterior margin lacking (in New Guinean species); elytra with submarginal interruption rather weak; scutellar strioles absent; 10th interval not distinct; 3rd interval 1-punctate; wings usually fully developed, but dimorphic in *latus;* middle and hind tarsi variably suleate (or costate) above (see notes under *Nebrioferonia,* p. 557), 5th tarsal segments with (more or less well developed) accessory setae (in New Guinean species); dilated segments ♂ anterior tarsi oblique.

Description. None required here.

Genotype. Probably not designated. Should be selected by next reviser from among the American species originally mentioned by Leconte.

Generic distribution. Australia, New Guinea, Celebes; and much of South, Central, and eastern North America north to about the southern border of Canada.

Notes. A possible geographical history of *Loxandrus* has been suggested in discussion under the tribe. The Australian and American species are very similar, probably related, and probably relics of a once more-widely distributed group. But further study is needed to determine the degree of their relationship.

Most species of this genus in both Australia and America live in swamps or vegetation floating in still water, but a few Australian species have entered other habitats. For example, *L. longiformis* Sloane occurs among cobble stones and gravel by running water, and several Australian species have left the water and live on the ground in rain forest or mountain forest. In some of these Australian species the wings have atrophied and the eyes are reduced in prominence. In New Guinea, all known species of the genus (except possibly *latus*) live among leaves etc. in very wet places, usually in or beside swamps or pools, but *L. latus* is apparently evolving in the direction of the Australian flightless mesophile species.

Loxandrus has not previously been reported from New Guinea, although several species occur there, but a species is described from Celebes (*L. celebensis* Bates 1871, *Ent. Month. Mag.* **8**, p. 133).

Key to Species of Loxandrus of New Guinea

1. Posterior-lateral prothoracic setae lacking; broad, with relatively small head (head *c.* .56 width prothorax); wings dimorphic (p. 551) . *latus*
— Posterior-lateral prothoracic setae present; more slender, with relatively larger head (head *c.* .64 to .72 width prothorax); wings fully developed 2
2. Prothorax with posterior angles well defined, almost right, scarcely blunted; small (6.4–7.0 mm.) (p. 552) . . . . . *subrectus*
— Prothorax with posterior angles broadly blunted-obtuse or rounded; larger (7–11 mm.) 3
3. Larger (9½–11 mm.) (p. 554) . . . . . *major*
— Smaller (7½–9½ mm.) (p. 555) . . . . . *medius*

Loxandrus latus n. sp.

Description. Medium-sized, broad; black, rather weakly iridescent, appendages brownish black; reticulate microsculpture fine and isodiametric on head, not visible on pronotum, present as extremely fine transverse lines on elytra. *Head* .56 and .56 width prothorax; eyes moderately prominent, genae oblique; antennae less slender than in following species, middle segments about 3X long as wide; front nearly evenly convex (sometimes slightly impressed at middle); frontal foveae short and shallow; neck constriction obsolete; mentum tooth entire. *Prothorax* broad, rounded; width/length 1.40 and 1.33; base/apex 1.21 and 1.12; base/head 1.30 and 1.30; sides broadly rounded throughout; base subtruncate or very broadly emarginate at middle, slightly rounded-oblique at sides, not margined except sometimes vaguely at extreme sides; apex rather deeply emarginate (so that angles are rather strongly advanced as a result of the emargination but not otherwise), finely margined; side margins narrow, but sides of pronotum depressed in about basal ⅖; each margin with anterior-lateral seta about ⅖ from apex, but posterior-lateral setae lacking; basal angles broadly rounded or broadly blunted-obtuse; disc convex; transverse impressions virtually obsolete; middle line fine, slightly abbreviated at both ends; basal foveae linear, about midway between middle line and margin, ⅓ (more or less) long as pronotum, irregularly punctate, as are areas between basal foveae and margins; disc otherwise virtually impunctate. *Elytra* shorter than usual, about ⅕ or more wider than prothorax (E/P 1.20 and 1.23), parallel-sided, with normal subapical sinuations and with marginal interruptions stronger than in other species; basal margins entire,

obtusely angulate at humeri; apices conjointly rounded; striae rather deeply impressed and plainly punctulate; intervals moderately convex, deeper apically and laterally, 3rd with 1 dorsal puncture by 2nd stria about middle of length. *Inner wings* dimorphic: fully developed in 2 (♂ ♀) from Dobodura and the 1 from Paumomu River, reduced to ½ or slightly more elytral length in 8 (both sexes) from Dobodura. *Lower surface:* sides of body extensively but rather irregularly punctate; prosternal process not margined; metepisterna moderately long; ventral segments not transversely impressed. *Legs* without obvious unusual special characters; middle and hind tarsi sulcate each side above, but sulci narrower than in other species, deeper on outer than on inner side; 5th segments with fine accessory setae. *Secondary sexual characters* normal; ♂ front tarsi dilated, dilated segments oblique, first 3 biseriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements:* length 7.5-8.7; width 3.0-3.4 mm.

Types. Holotype ♂ (M.C.Z. No. 30,225) and 9 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington); 1 paratype, Paumomu R., **Papua**, Sept.-Dec. 1892 (L. Loria, Straneo Coll.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. The relatively broad form distinguishes this species from all other New Guinean and (I think) all Australian *Loxandrus* and gives it a superficial resemblance to *Platycoelus depressus*. I do not know its habits; its form and state of wings suggest that it *may* live in leaf litter on the ground in rain forest rather than in wet places.

Loxandrus subrectus n. sp.

Description. Small; about average form (fig. 59) and convexity for genus; dark, moderately iridescent, appendages brown; reticulate microsculpture distinct, fine, isodiametric on head, indistinct (presumably very fine and transverse where present) on pronotum and elytra. *Head* .71 and .72 width prothorax; eyes large and prominent (in genus), genae short and oblique; antennae slender, median segments about 4X long as wide; front moderately convex, sometimes with 1 or 3 slight impressions near middle; frontal foveae weakly impressed, short; neck constriction scarcely indicated; mentum tooth entire. *Prothorax* subquadrate except more narrowed in front than behind;

width/length 1.26 and 1.28; base/apex 1.26 and 1.22; base/head 1.19 and 1.16; sides broadly arcuate anteriorly, straight and converging and usually slightly sinuate to base; base subtruncate or slightly emarginate at middle, slightly oblique at sides, not distinctly margined; apex broadly emarginate (but anterior angles not otherwise advanced), margined; lateral margins moderate except much broader at base, punctate especially basally, each with usual 2 setae about ⅓ from apex and at basal angle; basal angles almost right (slightly obtuse), scarcely blunted; disc with transverse impressions virtually obsolete, middle line fine, more or less abbreviated at ends; baso-lateral foveae linear, about midway between middle and sides of prothorax, about ⅖ long as latter; disc impunctate or nearly so except variably (individually) punctate between baso-lateral foveae and lateral margins at base. *Elytra* about ⅖ wider than prothorax (E/P 1.41 and 1.38), sides parallel, sometimes faintly sinuate before middle; subapical sinuations weak, marginal interruptions very weak; margin entire at base, obtusely angulate at humeri; striae well impressed, not distinctly punctulate; intervals moderately convex on disc, more so apically and laterally, 3rd with 1 dorsal puncture by 2nd stria near middle of length. *Inner wings* fully developed. *Lower surface:* extensively punctate at sides; prosternal process vaguely or not margined; metepisterna rather long; ventral segments not transversely impressed. *Legs* without obvious unusual characters; middle and hind tarsi deeply and broadly sulcate each side above (2-sulcate, 3-costate); 5th segments with a few weak accessory setae. *Secondary sexual characters* normal: ♂ with anterior tarsi dilated, dilated segments oblique, first 3 biseriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements:* length 6.4-7.0; width 2.3-2.6 mm.

Types. Holotype ♂ (M.C.Z. No. 30,226) and 9 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington); and 4 paratypes from Oro Bay (near Dobodura), Dec. 1943-Jan. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. The rather small size and especially the posterior prothoracic angles (well formed and nearly right) distinguish this species from others in New Guinea and also, I think, from all Australian species.

Loxandrus major n. sp.

Description. Large; about average form and convexity for genus; black, iridescent above, appendages dark (piceous to brown); reticulate microsculpture fine and isodiametric on front, faint (scarcely visible at 100X) and strongly transverse on pronotum and elytra. *Head* .66 and .67 width prothorax; eyes moderately prominent, genae oblique; antennae slender, middle segments about 4X long as wide; front almost evenly convex except for vague neck constriction and weakly impressed, irregular frontal foveae, indistinctly punctulate; mentum tooth rounded-truncate at apex. *Prothorax* rounded-subquadrate; width/length 1.19 and 1.31 (unusually variable); base/apex *c* 1.00 and 1.03; base/head 1.03 and 1.06; sides broadly arcuate through whole length or straighter posteriorly, usually not sinuate; base broadly emarginate, rounded toward sides, not distinctly margined; apex broadly emarginate (but anterior angles not otherwise advanced), finely margined, margin sometimes interrupted at middle; side margins moderate anteriorly, somewhat broader in posterior ½, each with usual 2 setae about ⅓ from apex and at position of (rounded) posterior angle; posterior angles slightly variable, broadly rounded or vaguely obtuse; disc rather weakly convex, with usual vague transverse impressions and finely impressed middle line abbreviated at ends; baso-lateral foveae linear, lightly impressed, about midway between middle and sides of pronotum, about ⅓ long as latter; surface of pronotum variably punctate across base (punctures usually rather sparse but obvious, but sometimes almost absent) and apex; other parts of disc impunctate or nearly so. *Elytra* ¼ wider than prothorax (E/P 1.27 and 1.27), parallel sided; subapical sinuations of margins moderate, marginal interruptions rather weak; anterior margins entire, strongly impressed, obtusely angulate at humeri; striae entire, moderately impressed, not or faintly punctulate; intervals slightly convex on disc, more so apically, 3rd with 1 dorsal puncture near 2nd stria about middle of length. *Inner wings* fully developed. *Lower surface:* sides of body extensively punctate; prosternal process margined; metepisterna moderately long; ventral segments not transversely impressed. *Legs* without obvious noteworthy characters; posterior tarsi deeply and broadly sulcate each side above (2-sulcate or 3-costate); 5th tarsal segments with weak accessory setae. *Secondary sexual characters* normal: ♂ with anterior tarsi dilated, dilated segments oblique, first 3 with biseriate squamae as

usual; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements:* length 9½-11; width 3.5-4.1 mm.

Types. Holotype ♂ (M.C.Z. No. 30,227) and 3 paratypes from Hollandia, **Neth. N. G.**, July-Sept. 1944 (Darlington). Additional paratypes from **Papua** as follows: 4, Palmer R. at Black R., June 15-22, 1936 (Archbold Expedition, A.M.N.H.); 16, Lake Daviumbu, Fly R., Aug. 19-30, Sept. 11-20 and 21-30, 1936 (Archbold Expedition, A.M.N.H.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Hollandia.

Notes. This new species is somewhat similar to one from North Queensland, Australia, that I identify tentatively as *laevigatus* Macleay (*sensu* Sloane 1903), but the New Guinean species has the prothorax somewhat more broadly rounded, and its base is not margined as it is in the Australian one. I should add that the Australian species of *Loxandrus* are very much in need of revision, and that the real relationship of the New Guinean species cannot be settled until the Australian ones are put in order.

Loxandrus medius n. sp.

Description. Form as figured (fig. 60); medium-sized, rather slender; black or brownish black, moderately iridescent, appendages varying from piceous to brownish yellow; reticulate microsculpture distinct and isodiametric on front of head, not distinguishable on pronotum, scarcely so except as very fine transverse lines on elytra. *Head* .64 and .66 width prothorax; eyes moderately prominent, genae oblique; antennae rather slender, median segments about 4X long as wide; front normally convex, sometimes slightly impressed anteriorly; frontal foveae shallow, short; neck constriction vague; mentum tooth entire. *Prothorax* rounded-subquadrate; width/length 1.23 and 1.31; base/apex 1.09 and 1.06; base/head 1.09 and 1.08; sides broadly arcuate through all or most of length, not sinuate; base truncate or faintly emarginate at middle, rounded-oblique at sides, not margined; apex broadly emarginate (but anterior angles not otherwise advanced), finely margined, margin very fine or partly obliterated at middle; lateral margins moderate anteriorly, much broader in basal ⅓, punctate especially posteriorly, each with usual 2 setae about ⅓ from apex and at (position of) basal angle; basal angles blunted-obtuse or rounded (somewhat variable); disc moderately convex; transverse impressions virtually

obsolete; middle line fine, abbreviated at ends; basal foveae linear but not sharply defined, about midway between middle and sides of pronotum and ⅓ or more long as latter, punctate; and adjacent parts of base of pronotum sometimes (not always) variably punctate; pronotum otherwise impunctate or nearly so. *Elytra* ⅕ or ¼ wider than prothorax (E/P 1.20 and 1.26); anterior margin entire, rather strongly but obtusely angulate at humeri; sides subparallel, subapical sinuations moderate, marginal interruptions rather weak; apices narrowly irregularly blunted or rounded; striae well impressed, faintly or distinctly punctulate; intervals moderately convex, deeper at sides and apex; 3rd interval 1-punctate by 2nd stria near or before middle of length. *Inner wings* fully developed. *Lower surface:* sides of body below punctate but rather variably so (proepisterna sometimes almost impunctate); prosternal process usually margined (but margin sometimes vague); metepisterna moderately long; ventral segments not transversely impressed. *Legs* without obvious unusual characters; middle and hind tarsi strongly broadly sulcate each side above (2-sulcate) or vaguely 4-sulcate; 5th segments with weak accessory setae. *Secondary sexual characters* normal: ♂ front tarsi dilated, dilated segments oblique, biseriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment. Male copulatory organs: figure 67. *Measurements:* length *c.* 7-9½; width 2.8-3.4 mm.

Types. Holotype ♂ (M.C.Z. No. 30,228) and 45 paratypes from Dobodura, **Papua**, Mar.-July 1944 (Darlington). Additional paratypes as follows. **Papua**: 5, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 1, Sagarai (River), Oct. 17, 1917 (J. T. Zimmer, Chicago Mus.). **N-E. N. G.**: 4, Aitape, Aug. 1944 (Darlington). **Neth. N. G.**: 37, Hollandia, July-Sept. 1944 (Darlington); 13 Maffin Bay, Aug. 1944 (Darlington); 72, Sansapor (Vogelkop) Aug. 1944 (Darlington); 1, Bernhard Camp, 50 m. (*c.* 150 ft.), July-Sept. 1938 (J. Olthof, Leiden Mus.).

Additional material. **Papua**: 1, Rigo, July 1889 (L. Loria, Straneo Coll.); this specimen is very small, with prothorax broader than usual; I assign it to the present species, but with doubt.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This common and somewhat variable species is similar to *L. celebensis* Bates which, however, has a broader prothorax with less punctate base of pronotum. I have examined three specimens of *celebensis* from "Celebes" in the British Museum

and 2 additional specimens labeled "Dory, New Guinea," but this latter locality is doubtful (see p. 331) and I see no reason to list the species from New Guinea even tentatively. The "Dory" specimens agree with the examples from Celebes and not with those from Sansapor. This species is probably allied also to certain Australian ones, but in the present state of chaos of the Australian species I cannot find an Australian name to use for it.

Genus Nebrioferonia Straneo

Straneo 1939, Mem. Soc. Ent. Italiana **18**, p. 119.

Diagnosis. Medium-sized (as large as or larger than largest *Loxandrus*), winged Pterostichini; black or brownish black, dull, or shining and iridescent, appendages dark brown to yellowish; prothorax strongly cordate; other external characters almost as in *Loxandrus: i. e.* mentum tooth entire; baso-lateral impressions or pronotum single and linear; elytra with subapical marginal interruptions weak or almost obsolete (weak in some *Loxandrus, e.g. major*), without scutellar striae, 3rd intervals 1-punctate; first 3 segments middle and hind tarsi 2- or 4-sulcate (3- or 5-costate) above (see following notes); 5th tarsal segments with weak accessory setae; dilated segments ♂ front tarsi oblique.

Description. See Straneo 1939.

Genotype. Nebrioferonia strigitarsis Straneo (below).

Generic distribution. Widely distributed in New Guinea; unknown elsewhere.

Notes. So far as I can find, the only real difference between this genus and the New Guinean species of *Loxandrus* is in form of prothorax, strongly cordate in *Nebrioferonia.* The genotype of this genus is much duller than usual in *Loxandrus* (dull *Loxandrus* occur in America), but *Nebrioferonia strancoi* (described below) is shining and iridescent with microsculpture as usual in *Loxandrus.* The subapical interruptions of elytral margins are notably weak in *Nebrioferonia* (especially in *straneoi*) but are weak also in some *Loxandrus.* The first 3 segments of middle and hind tarsi are 4-sulcate (5-costate) above in *N. strigitarsis:* broadly 2-sulcate (3-costate) in *N. strancoi;* variable in *Loxandrus. Loxandrus medius* has these tarsal segments broadly 2-sulcate or vaguely 4-sulcate and therefore approaches the condition in *Nebrioferonia strigitarsis. Loxandrus major* and *subrectus* have these segments broadly 2-sulcate (3-costate), like *Nebrioferonia strancoi.* And *Loxandrus latus* has the segments

narrowly grooved or margined at sides, with middle part of each segment almost evenly convex, not costate as in the other species.

N. strigitarsis lives in cobblestone and gravel banks and bars of large streams. The habits of *N. strancoi* are unrecorded.

Key to Species of Nebrioferonia

1. Elytra less shining, with reticulate microsculpture of isodiametric or weakly transverse meshes (p. 558) . . . . . *strigitarsis*
— Elytra very shining and iridescent, with microsculpture (as seen at 50X or 100X) of very fine, close-set transverse lines rather than distinct meshes (p. 559) . . . . . *strancoi*

Nebrioferonia strigitarsis Straneo

Straneo 1939, Mem. Soc. Ent. Italiana **18**, p. 119, figs. 7–12.

Description. See Straneo's description and figures. This species superficially resembles *Nebria picicornis* Fabricius of Europe, as Straneo says. Proportions: head .74, .79, .81 width prothorax; prothoracic width/length 1.25, 1.30, 1.30, base/apex .97, .95, .97, base/head .95, .90, .90; width elytra/prothorax 1.36, 1.42, 1.46. Male copulatory organs: figure 68. *Measurements:* length *c.* 14-16½; width 4.8-5.9 mm.

Types. Holotype (Genoa Civic Mus.) and paratypes from Haveri, S-E. New Guinea (presumably **Papua**), collected by Loria. Paratypes said to be in Straneo and Andrewes collections and in Deutsches Ent. Institut, and one (received from Straneo) now in M.C.Z. (Type No. 30,229).

Occurrence in New Guinea. **Papua**: Haveri (the types); 11, Dobodura, Mar.-July 1944 (Darlington); 5, Oro Bay, Dec. 1943-Jan. 1944 (Darlington); 3, Kokoda, 1200 ft., Aug. 1933 (Cheesman). **N-E. N. G.**: 11, Nadzab, July 1944 (Darlington); 1, Mons Oertzen, 1897 (Biró, Hungarian National Mus.); 1, Owen Stanley Range, Goilala: Loloipa, Dec. 21-31, 1957 (W. W. Brandt, Bishop Mus.). **Neth. N. G.**: 2, Hollandia, May 1945 (Malkin, U.S.N.M); 1, same locality, May 1945 (Hoogstraal, M.C.Z.); 4, Hollandia area, W. Sentani, Cyclops Mts., 50-100 m. (*c.* 150-325 ft.), June 22-24, 1959 (J. L. Gressitt, Bishop Mus.) taken in light trap.

Measured specimens. A pair (♂ ♀) from Dobodura and a ♀ paratype (M.C.Z.) from Haveri, in this order.

Notes. I found this species only in cobblestone and gravel banks and bars of rivers (not small brooks). This habitat is different from that of most *Loxandrus*, but like that of *L. longiformis* Sloane of Australia. But I doubt if the similarity of

habits indicates direct relationship between *Nebrioferonia* and *Loxandrus longiformis*. More likely 2 different stocks of *Loxandrus* have entered the river-bar habitat independently.

N. strigitarsis may vary geographically, but more material is needed to show whether or not subspecies can be recognized.

Nebrioferonia straneoi n. sp.

Description. Form (fig. 61) nearly as in *Nebrioferonia strigitarsis*, with cordate prothorax; appendages slender; surface shining, irideseent as in *Loxandrus;* brownish black, appendages dark reddish, outer parts of antennae brown; reticulate microsculpture distinct and of small isodiametric meshes on head, faint (fragmentary) on pronotum, of very fine close transverse lines on elytra. *Head* .74 and .77 width prothorax; eyes rather small; genae oblique, about long as eyes; antennae slender, middle segments (not including pubescence) more than 4X long as wide, mandibles moderately long, curved, acute; 2 supraocular setae each side; front moderately convex; neck slightly but broadly impressed; frontal foveae short, shallow, not sharply defined; mentum tooth entire. *Prothorax* cordate; width/length 1.18 and 1.22; base/apex .99 and 1.00; base/head .95 and .94; sides broadly arcuate in about anterior ¾, broadly sinuate before base; base subtruncate or broadly emarginate, slightly rounded-oblique at sides, vaguely margined; apex broadly emarginate, with anterior angles slightly advanced beyond arc of emargination; apex margined at sides but not distinctly so at middle; reflexed side margins rather broad and nearly even throughout, each with usual 2 setae about ⅓ from apex and at basal angle; basal angles sharply defined, right or slightly obtuse; disc moderately convex; transverse impressions almost obsolete; middle line fine, abbreviated at ends; baso-lateral impressions vaguely linear (but not sharply separated from depressed baso-lateral areas of pronotum), nearer margins than middle, about ⅖ length of pronotum; basal area and sides of pronotum behind middle irregularly punctate. *Elytra* much wider than prothorax (E/P 1.48 and 1.55), subparallel at middle, with subapical sinuations weak and marginal interruptions almost obsolete; humeri rounded-prominent; anterior margins entire, weakly angulate at humeri; striae entire, moderately impressed, not distinctly punctulate; intervals slightly convex, 3rd 1-punctate by 2nd stria about middle of elytral length. *Inner wings* fully developed. *Lower surface:* meso- and metepisterna

and sides of first three ventral segments punctate or roughened, proepisterna and other ventral segments not or less so; prosternal process without setae, not distinctly margined; metepisterna rather long; ventral segments not transversely impressed. *Legs* slender but without other obvious unusual characters; 5th tarsal segments with a few small, weak accessory setae (sometimes broken off); middle and hind tarsi broadly sulcate each side and roughened above; 4th segment hind tarsi emarginate but not lobed. *Secondary sexual characters* normal: ♂ with anterior tarsi dilated, dilated segments oblique, first 3 biseriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment. Male copulatory organs: figure 69. *Measurements:* length *c.* 12-13; width 4.4-4.7 mm.

Types. Holotype ♂ (Leiden Mus.) and 2 (♂ ♀) paratypes from Rattan Camp, Snow Mts., **Neth. N. G.**, 1200 m. (*c.* 3900 ft.), Feb.-Mar. 1939 (Toxopeus); the ♂ paratype is now in the M.C.Z. (Type No. 30,230). Also 1 ♀ paratype from Kokoda, **Papua**, 1200 ft., July 1933 (Cheesman, British Mus.).

Occurrence in New Guinea. Known only from the types.

Measured specimens. The ♂ holotype and ♀ paratype from Rattan Camp.

Notes. Although this insect vaguely resembles some species of "*Colpodes*" and although it has virtually lost the interruption of the outer margin of the elytron, other characters leave no doubt that it is a pterostichine, and I find no good reason to distinguish it from *Nebrioferonia*, which in turn, as I have said, seems closely allied to *Loxandrus*.

The habitat of the present species is not recorded but is most likely beside running water.

Tiferonia new genus

Diagnosis. A very small, winged pterostichine, characterized as indicated in the key to genera (p. 499); in general the characters seem to be those of a minute *Loxandrus* but without dorsal puncture on 3rd elytral interval and with ♂ tarsi only narrowly dilated.

Description. Head small; mandibles rather long, curved, acute, without setae in scrobes; antennae with 2nd segment not asymmetrically inserted in 1st; antennae pubescent from 4th segment; all palpi slender and pointed in both sexes; labium 2-setose; paraglossae rather wide (but narrower than middle part of labium) and long; inner lobe of maxilla curved at tip, ciliate

on inner side; mentum tooth narrow, not emarginate. *Prothorax* with basal impressions linear. *Elytra* with slight subapical sinuations and strong subapical interruptions of margin; basal margin entire, joining bases of sutural striae, angulate but not dentate at humeri; margins not serrate; basal punctures just inside bases of 2nd striae; scutellar strioles absent; 9th stria not distinguishable from marginal channel; 3rd interval impunctate. *Lower surface:* prosternal process not margined, without setae, its posterior declivity rounded; metepisterna rather long; ventral segments not transversely impressed. *Legs:* tarsi not sulcate (or at most lightly or faintly so) at sides above; 5th segments with accessory setae. *Secondary sexual characters:* ♂ front tarsi only slightly dilated (segments 2 and 3 slightly longer than wide), the segments not obviously asymmetrical but possibly derived from a wider asymmetrical form, the first 3 segments biseriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment.

Genotype. Tiferonia parva (described below).

Generic distribution. New Guinea and the Philippines (will probably be found also in the Moluccas and Celebes, but not yet recorded from there).

Notes. This new genus is surprisingly similar, superficially, to *Tachys serra* (p. 405), but of course there is no direct relationship. The new genus is also superficially similar to *Melanochrous* (*Patellus*) of southeastern Asia and the western part of the Malay Archipelago. However it differs from *Melanochrous* in having the ♂ tarsi biseriately squamulose (not densely pubescent) below and in having linear (rather than indefinitely defined) baso-lateral pronotal impressions. The Philippine species of the present genus (I have a series from Leyte Is.) differs from the New Guinean one in having only one supraocular seta each side. This Philippine species has been described by Jedlicka (1935, *Acta Soc. Ent. Czechoslovakia* **32**, p. 108) as *Fouquetius brunneus.* However, this species and the one now being discussed from New Guinea do not seem to be true *Fouquetius.* The latter genus, which occurs in tropical Asia and Africa, has dentate humeri and serrate elytral margins, which the species now under consideration do not. They may (or may not) be relatives of *Fouquetius.* And they may (or may not) be derivatives of *Loxandrus.* If they are, they are distinguished by very small size, narrow ♂ tarsi, and lack of puncture on 3rd elytral interval. The habitat of the new genus is like that of most *Loxandrus:* wet shady places near water.

Tiferonia parva n. sp.

Description. Form (fig. 62) as described under genus; irregularly reddish piceous, appendages testaceous; rather shining, elytra slightly iridescent; reticulate microsculpture distinct and isodiametric on front, indistinguishable (or just visible as faint transverse meshes) on pronotum; indistinguishable (probably reduced to very fine close-set scratches) on elytra. *Head* .57 and .58 width prothorax; eyes of moderate size and prominence; genae about long as eyes, oblique; antennae rather stout, middle segments about 1½X long as wide; front irregularly convex; frontal foveae short, linear, irregular, curving outward posteriorly and ending about mid-eye level; clypeal suture fine; neck constriction obsolete; 2 supraocular setae each side. *Prothorax* transversely subquadrate except strongly narrowed anteriorly, scarcely so posteriorly; width/length 1.28 and 1.33; base/apex 1.51 and 1.54; base/head 1.64 and 1.63; sides rounded anteriorly, nearly straight and slightly converging posteriorly; base subtruncate, slightly oblique toward sides; apex subtruncate at middle, anterior angles slightly advanced; base not margined, apex margined at sides but margin rather widely interrupted at middle; side margins rather narrow anteriorly, vaguely merging with slightly depressed sides of disc posteriorly, each with usual 2 setae about ⅓ from apex and at basal angle; basal angles almost right (slightly obtuse), minutely blunted or subdenticulate; disc strongly convex; transverse impressions almost obsolete; middle line fine, abbreviated at both ends; basolateral impressions deep, linear, slightly nearer middle than margins, about ⅓ long as pronotum; disc impunctate. *Elytra* about ¼ wider than prothorax (E/P 1.27 and 1.25), subquadrate, with sides slightly sinuate behind humeri; apices between independently and conjointly rounded; humeri prominent, with margin rectangularly angulate; striae entire, well impressed, finely punctulate. *Inner wings* fully developed. *Lower surface* as described under genus; metepisterna and sides of metasternum and first ventral segment irregularly punctate, but lower surface otherwise virtually impunctate. *Legs* as described under genus; without obvious unusual characters. *Secondary sexual characters* as described under genus. Male copulatory organs: figure 70. *Measurements:* length *c.* 4.0-4.5; width 1.7-1.9 mm.

Types. Holotype ♂ (M.C.Z. No. 30,231) and 18 paratypes from Aitape, **N-E. N. G.**, Aug. 1944 (Darlington). Additional paratypes as follows: **Papua**: 2, Dobodura, Mar.-July 1944

(Darlington); **Neth. N. G.**: 7, Hollandia, July-Sept. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Aitape.

Notes. For the similarities and possible relationships of this species see notes under the genus. It occurred in damp ground or debris on the ground, usually by water, in shady places, in the same habitat as the superficially similar *Tachys serra*. Some *Loxandrus* occurred in this habitat too.

Genus CATADROMUS Macleay

Macleay 1825, Annulosa Javanica, p. 18.
Tschitschérine 1896, Annuaire Mus. Zool. Acad. Sci. St. Petersburg **1**, p. 144.
Csiki 1930, Coleop. Cat., Carabidae, Harpalinae **4**, p. 737 (see for additional references).

Diagnosis. Very large Carabidae (47-56 mm. in New Guinea); subparallel; black with green margins; winged; characterized technically by four segments each antenna glabrous; etc.

Description. None needed here. See Tschitschérine 1896.

Genotype. Carabus tenebroides Olivier of Java, Australia, etc.

Generic distribution. Recorded from Australia, the Moluccas, New Guinea, Java, and Singapore.

Notes. See notes under following species.

CATADROMUS TENEBROIDES (Olivier)

Olivier 1790, Encyclopedie Methodique **5**, p. 324 (*Carabus*).
Tschitschérine 1896, Annuaire Mus. Zool. Acad. Sci. St. Petersburg **1**, pp. 144, 147.
Sloane 1920, Proc. Linn. Soc. New South Wales **45**, p. 321.
Andrewes 1921, Trans. Ent. Soc. London **1921**, p. 175.
Csiki 1930, Coleop. Cat., Carabidae, Harpalinae **4**, p. 737 (see for additional references and synonymy).
rajah Wiedeman 1824, Analecta Ent., p. 7 (*Harpalus*).
Andrewes 1921, Trans. Ent. Soc. London **1921**, p. 175.

Description. None needed here. This is the only species of the genus known in New Guinea. Proportions of New Guinean specimens: head .80 and .69 width prothorax; prothoracic width/length 1.21 and 1.23, base/apex 1.13 and 1.32, base/head 1.01 and 1.19; width elytra/prothorax 1.22 and 1.19. *Measurements* (of 2 individuals listed below): 47 x 14.4, 56 x 16.7 mm.

Types. Of *tenebroides*, presumed lost or destroyed; of *rajah*, in the Copenhagen University Zool. Mus.; both types were from Java.

Occurrence in New Guinea. **Papua**: 1, Oro Bay, Feb.-May (P. L. Horton, A.M.N.H.). **Neth. N. G.**: 1, Hollandia, Jan. 1945 (B. Malkin, Malkin Coll.).

Measured specimens. The 2 listed above.

Notes. Sloane says that he compared specimens from Australia and Java without being able to differentiate them, and gives the range of the species as Australia, Java, and Amboyna. Andrewes says he has no doubt that *rajah* is identical with *tenebroides*. The two are kept separate in the *Coleop. Cat.*, but it seems to me that they are in fact one species, which occurs in eastern Australia, New Guinea, the Moluccas (Amboyna), and Java, although I am not sure it is native in all these places. It is curious that this large and striking insect has been collected only twice in New Guinea, both times at localities where military traffic was heavy. Species of this genus frequently fly to light in Australia, and occasional specimens of the present one may have been attracted onto lighted boats in Australian ports and then onto shore again to lighted camps in New Guinea.

The Oro Bay specimen is somewhat smaller and narrower than usual in this species, with relatively large head and narrow prothoracic base, but I think it is probably an individual variant. The Hollandia specimen agrees well with those from Java.